

DIVISION 1

GENERAL **REQUIREMENTS**

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The work to be performed under this Contract shall consist of furnishing all tools, equipment, materials, supplies, and manufactured articles and for furnishing all transportation and services, including fuel, power, water, and essential communications, and for the performance of all labor, work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The work shall be complete, and all work, materials, and services not expressly shown or called for in the Contract documents which may be necessary for the complete and proper construction of the work in good faith shall be performed, furnished, and installed by the Contractor as though originally so specified or shown, at no increase in cost to the City.
- B. Prior to construction, the Contractor shall verify existing utilities identified on the Drawings and locate other potential utilities in their working area that may not be shown on the Drawings. The utility verifications consist of excavation to verify tie-in points and to locate potential conflicts that may affect the work as shown on the Drawings. The Contractor shall be responsible for the coordination of this work with the associated utility owners and permitting agencies having jurisdiction over the specific locations to be verified.

1.02 SCOPE

- A. It is the intent of the City to obtain a complete and working installation under this contract and any items of labor, materials or equipment, which may reasonably be assumed as necessary to accomplish this end, should be supplied whether or not specifically shown on the plans or described herein. Maintenance of the existing utility systems is mandated throughout the construction period.
- B. In general, the project consists of a water main improvement. The water main improvement project consists of the following: The project includes replacement of the existing 6-inch diameter water main along the west side of NE 6th Avenue with approximately 4,000 linear feet of 12-inch diameter DIP water main including associated water main stub outs, new water services, new meter boxes as directed by the City and/or Engineer, water service reconnections, new fire hydrant installations, removal of existing fire hydrants and returning to the city, abandonment of existing water main, roadway restoration, sidewalk restoration, and curb and gutter restoration.

1.03 WORK BY OTHERS

- A. The Contractor shall cooperate fully with all utility forces of the City, or other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any

facilities which interfere with the progress of the work, and shall schedule the work so as to minimize interference with said relocation, altering, or rearranging of facilities.

- B. The Contractor's attention is directed to the fact that work could be conducted at the site by other contractors during the performance of the work under this Contract. The Contractor shall conduct its operations so as to cause a minimum of interference with the Work of such other contractors, and shall cooperate fully with such contractors to provide continued safe access to their respective portions of the site, as required to perform their respective contracts.
- C. When two or more contracts are being executed at one time on the same or adjacent land in such manner that Work on one contract may interfere with that on another, the City shall determine the sequence and order of the Work. When the territory of one contract is the necessary or convenient means of access for the execution of another contractor, such privilege of access or any other reasonable privilege may be granted by the City to Contractor.

1.04 CONTRACTOR FURNISHED MATERIAL AND EQUIPMENT

- A. All equipment, materials, or devices incorporated in this project shall be new and unused, unless indicated otherwise in the Contract Documents and shall be the products of reliable manufacturers who, unless otherwise specified, have been regularly engaged in the manufacture of such material and equipment for at least five (5) years. Procedures and additional requirements regarding manufacturer's experience and substitutions are included in Section 01340.

1.05 DRAWINGS OF EXISTING FACILITIES

- A. Drawings of the existing utilities may be inspected at the City's Office. These drawings are for information only and are not a part of the Contract Documents. In making these drawings available for inspection, the City makes no guarantee, either expressed or implied, as to their accuracy or completeness.
- B. The Contractor shall contact representatives for other utilities, facilities in proximity of the work and Sunshine State One Call Inc., to obtain the as-built information from them directly. The utilities shown on Drawings are based upon available records supplied from various sources. The City makes no guarantee, either expressed or implied, as to their accuracy or completeness.

1.06 ITEMS SPECIFIED ON DRAWINGS

- A. Certain items of material and/or equipment, and their installation may be specified on the Drawings and not mentioned in the Specifications. Such items are to be considered as both shown on the Drawings and noted in the Specifications and be provided by the Contractor in accordance with the Specification on the Drawings.

1.07 FIELD LAYOUT OF WORK

- A. See Section 01050 – Field Engineering.
- B. All survey work for construction control purposes shall be made by the Contractor at his expense.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01025

BASIS OF PAYMENT

PART 1 - GENERAL

1.01 GENERAL

- A. Payments to the Contractor shall be made on the basis of the bid items listed on the Proposal Bid Form as full and complete payment for furnishing all materials, labor, tools and equipment, and for performing all operations necessary to complete the work included in the Contract Documents. Such compensation shall also include payments for any loss or damages arising directly or indirectly from the work, or from any discrepancies between the actual quantities of work and those shown in the Contract Documents, or from any unforeseen difficulties which may be encountered during the prosecution of the work until the final acceptance by the City.
- B. The prices stated in the proposal include full compensation for overhead and profit, all costs and expenses for taxes, labor, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, labor for handling materials during inspection, furnishing and repairing small tools and ordinary equipment, mobilization, home office expenses and general supervision, bond, insurance, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the work as shown on the plans and specified herein. In addition, the Contractor shall include the actual cost of social security taxes, unemployment insurance, worker's compensation, fringe benefits, inclusive of life and health insurance, union dues, pension, pension plans, vacations, and insurance and contractor's public liability and property damage insurance involved in the work based on the actual wages paid to such labor and all other general costs and profits, prorated to each Item.
- C. Unless otherwise specifically stated elsewhere herein, the Contractor shall include in the prices bid all materials, electrical supply, fuel, lubricants, temporary equipment, temporary wiring, temporary piping and fittings, pumps, gages, and all other items of whatever nature required to completely test, balance, disinfect if required, and put into fully operational condition all equipment and/or systems supplied by either the Department or the Contractor and installed as a part of this Project. Further, any test materials supplied by the Contractor shall be completely satisfactory to the Department. Any decision as to whether a particular material is suitable for test purposes shall be at the sole discretion of the Engineer whose decision shall be final. Any material considered not suitable shall be immediately replaced by the Contractor with suitable material and no extra compensation will be allowed.

- D. The Basis of Payment for an item at the price shown in the Proposal shall be in accordance with its description of the item in this Section and as related to the work specified and as shown on the Drawings. Unit prices will be applied to the actual quantities furnished and installed in conformance with the Contract Documents.
- E. The Contractor's attention is called to the fact that the quotations for the various items of work are intended to obtain a complete and working installation under this Contract, and any items of labor, equipment or materials which may reasonably be assumed as necessary to accomplish this end shall be supplied whether or not they are specifically shown on the Plans or stated herein. Should the Contractor feel that the cost of any item of work has not been established by the Proposal or Basis of Payment, he shall include the cost for that work in the unit price so that his proposal for the project does reflect his total price for completing the work in its entirety.
- F. The Contractor shall submit, with each Payment Request, a list of M/WBE Subcontractors that he is or will be utilizing for his contract. For each M/WBE Subcontractor, the following information shall be provided:
 - 1. Total sub-contract dollar amount.
 - 2. Amount paid to date.

1.02 MEASUREMENT

The quantities for payment under this Contract shall be determined by actual measurement of the completed items, in place, ready for service and accepted by the City, in accordance with the proposal bid form described in Section 00301, unless otherwise specified. A representative of the Contractor and the City shall witness all field measurements.

1.03 PAYMENT ITEMS

For purposes of describing items appearing in the Bid Schedule, pricing for each item shall include work and components described below:

- A. **Items No. 1-5: Furnish and Water Mains (Various sizes and materials)** - Payment for all labor, equipment and material for all work necessary and required the installation of new water mains along NE 6th Avenue between 137th Street and 148th Street as shown in the plans. This work shall include but not be limited to survey, clearing and grubbing, grading and regrading, removal and disposal of existing asphalt pavements of varying thickness, locating, protection and support of **all existing utilities**, coordination with all utility facility owners for relocations of existing utilities; including but not limited to gas mains and all other utilities, preparation and submittal of shop drawings, preparation of a certified stormwater

pollution prevention plan, installing stormwater pollution prevention systems, tree and shrub protection, trimming, signage and mailbox protection, removal and replacement, fencing and gate protection and removal and replacement, power pole and guy wire support and relocation (including coordination and applicable fees) and removal and replacement, irrigation system protection or removal and replacement, piping trench excavation (including exploratory excavations), sheeting, shoring, bracing, dewatering, groundwater sampling, treatment and disposal, dewatering permit applications preparation, fees and permitting, pipe (Class 52 domestic ductile iron or SCH80 PVC for 2" water mains), all domestic ductile iron poly wrapped fittings (shown and not shown), all necessary pipe fittings, couplings, and adapters, 316 stainless steel washers, nuts and bolts, 316 stainless steel restraining rods for mechanical joint fittings, restraining devices for proposed and existing water mains, inserta-valves, linestops and bypass piping for linestops including thrust blocks, connections and reconnections to existing water mains, polyethylene encasement for all domestic ductile iron pipe and fittings, metallic tracer wire, line locator, identification markers, pipe installation, backfill material, reinforced concrete slabs and/or excavatable flowable fill, bedding, removal and disposal of unsuitable soils, compaction, limerock base or other base materials as necessary, prime and tack coats, removal of pavement and installation of temporary pavement (3" thickness required for FDOT roadways to match existing grades/elevations), work during restricted hours and night work as necessary per FDOT requirements, full restoration and cleanup, sodding, grading and re-grading, driveway removal and restoration of various materials including but not limited to; pavers, stamped concrete, brick and specialty materials, curbing and gutter removal and restoration, sidewalk removal and restoration, cathodic protection, bacteriological sampling and testing (including fees), pressure testing, flushing devices including risers or canons, blow off valves and appurtenances, exfiltration trench and drainage piping removal and replacement, and all necessary accessories required for a complete installation, as-built documentation signed and sealed by as PSM in hardcopy and electronic form (PDF and Autocad), other restorations and other related work not defined in other Bid Package Items. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation.

- B. **Items No. 6 - 8 – Furnish and Install Gate Valves (various sizes)** - Payment for all labor, equipment and material for all work necessary and required for the installation of new gate valves (excluding tapping valves and fire hydrant isolation valves), as shown in the plans, valve box, valve box extensions, operating nut extensions, test station box and cap, valve wrenches, restraining devices, traffic rated covers, concrete collars. This work shall include but not be limited to survey, clearing and grubbing, grading and regrading, removal and disposal of existing asphalt pavements of varying thickness, locating, protection and support of **all existing utilities**, coordination with all utility facility owners for relocations of existing utilities; including but not limited to gas mains and all other utilities, preparation and submittal of shop drawings, preparation of a certified stormwater pollution prevention plan, installing stormwater pollution

prevention systems, tree and shrub protection, trimming, removal and replacement, signage and mailbox protection, removal and replacement, fencing and gate protection and removal and replacement, power pole and guy wire support and relocation (including coordination and applicable fees) and removal and replacement, irrigation system protection or removal and replacement, piping trench excavation (including exploratory excavations), sheeting, shoring, bracing, dewatering, groundwater sampling, treatment and disposal, dewatering permit applications preparation and permitting, valve, valve box, valve box extensions, operating nut extensions, test station box and cap, valve wrenches, restraining devices, traffic rated covers, concrete collars, domestic ductile iron fittings, 316 stainless steel nuts, washers and bolts, 316 stainless steel restraining rods for mechanical joint fittings, restraining devices for proposed and existing water mains, polyethylene encasement for all domestic ductile iron valves, metallic tracer wire, line locator, identification markers, pipe installation, backfill material, concrete slabs and/or excavatable flowable fill, bedding, removal and disposal of unsuitable soils, compaction, limerock base or other base materials as necessary, prime and tack coats, removal of pavement and installation of temporary pavement (3" thickness required for FDOT roadways to grade), full restoration and cleanup, sodding, grading and regrading, driveway removal and restoration of various materials including but not limited to; pavers, stamped concrete, brick and specialty materials, curbing removal and restoration, sidewalk removal and restoration, cathodic protection, bacteriological testing, pressure testing, and all necessary accessories required for a complete installation, exfiltration trench and drainage piping removal and replacement, as-built documentation signed and sealed by a licensed PSM in hardcopy and electronic form (PDF and Autocad), other restorations and other related work not defined in other Bid Package Items. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation.

- C. **Item No. 9 - Furnish & Install 6" Tapping Sleeve and Valve** - Payment for all labor, equipment and material for all work necessary and required for the installation of new tapping sleeves and tapping valves, as shown in the plans. This work shall include but not be limited to survey, clearing and grubbing, removal and disposal of existing asphalt pavements of varying thickness, removal, disposal, and replacement of existing underground geotextile fabric without impacting or damaging portions of geotextile fabric to remain, locating and protection of **all existing utilities**, coordination with all utility facility owners for relocations of existing utilities; including but not limited to gas mains and all other utilities, preparation and submittal of shop drawings, preparation of a certified stormwater pollution prevention plan, installing stormwater pollution prevention systems, tree and shrub protection, trimming, removal and replacement, signage and mailbox protection, removal and replacement, fencing and gate protection and removal replacement, power pole and guy wire support and relocation (including coordination and applicable fees), removal and replacement, irrigation system protection or removal and replacement, piping trench excavation (including exploratory excavation), sheeting, shoring, tremie

concrete, bracing, dewatering, groundwater sampling, treatment and disposal, dewatering permit applications preparation and permitting, tapping machine, tapping sleeve, tapping valve, valve box and extensions, operating nut extensions, valve wrenches, domestic ductile iron fittings (shown and not shown), 316 stainless steel nuts, washers and bolts, 316 stainless steel restraining rods for mechanical joint fittings, restraining devices for proposed and existing water mains, polyethylene encasement for all domestic ductile iron valves, metallic tracer wire, line locator, identification markers, pipe installation, backfill material, concrete slabs and/or excavatable flowable fill, bedding, removal and disposal of unsuitable soils, compaction, exfiltration trench and drainage piping removal and replacement, limerock base, prime and tack coats, removal of pavement and installation of temporary pavement (2" thickness required for City streets and 3" thickness required for FDOT roadways), full restoration and cleanup, sodding, grading and regrading, driveway removal and restoration of various materials including but not limited to; pavers, stamped concrete, brick and specialty materials, curbing removal and restoration, bacteriological testing, pressure testing, and all necessary accessories required for a complete installation, as-built documentation in hardcopy and electronic form (PDF and Autocad), other restorations and other related work not defined in other Bid Package Items. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation.

- D. **Item No. 10 – Furnish and Install Fire Hydrant Assemblies (Remove and Replace)** - Payment for all labor, equipment and material for all work necessary and required for the installation of fire hydrant assemblies per standard details and specifications included as part of the bid documents. The price bid shall be full compensation for each hydrant assembly; including but not limited to; hydrant barrel assembly 6" domestic ductile iron pipe and fittings, hydrant main, steel guard posts/bollards, concrete slab and concrete collar as needed and removal and delivery of the old/existing hydrant assemblies to the City's facilities. This work shall include but not be limited to survey, clearing and grubbing, grading and regrading, removal and disposal of existing asphalt pavements of varying thickness, removal, disposal, and replacement of sod, curb, gutter, pavement and sidewalks necessary for the removal and replacement of fire hydrant assemblies, painting of fire hydrant, bollards, locating, protection and support of **all existing utilities**, coordination with all utility facility owners for relocations of existing utilities; including but not limited to gas mains and all other utilities, preparation and submittal of shop drawings, preparation of a certified stormwater pollution prevention plan, installing stormwater pollution prevention systems, tree and shrub protection, trimming, removal and replacement, signage and mailbox protection, removal and replacement, fencing and gate protection and removal and replacement, power pole and guy wire support and relocation (including coordination and applicable fees) and removal and replacement, irrigation system protection or removal and replacement, piping trench excavation (including exploratory excavations), sheeting, shoring, bracing, dewatering, groundwater sampling, treatment and disposal, dewatering permit applications preparation and

permitting, pipe (Class 52 domestic ductile iron), valve, valve box, valve box extensions, operating nut extensions, test station box and cap, valve wrenches, restraining devices, traffic rated covers, concrete collars, all domestic ductile iron fittings for a complete installation whether shown or not shown), 316 stainless steel nuts, washers and bolts, 316 stainless steel restraining rods for mechanical joint fittings, restraining devices for proposed and existing water mains, polyethylene encasement for all domestic ductile iron pipe, fittings and valves, metallic tracer wire, line locator, identification markers, pipe installation, backfill material, reinforced concrete slabs and/or excavatable flowable fill, bedding, removal and disposal of unsuitable soils, compaction, limerock base or other base materials as necessary, prime and tack coats, removal of pavement and installation of temporary pavement (3" thickness required for FDOT roadways), full restoration and cleanup, sodding, grading and regrading, driveway removal and restoration of various materials including but not limited to; pavers, stamped concrete, brick and specialty materials, curbing removal and restoration, sidewalk removal and restoration, cathodic protection, bacteriological testing, pressure testing, and all necessary accessories required for a complete installation, exfiltration trench and drainage piping removal and replacement, as-built documentation signed and sealed by a licensed PSM in hardcopy and electronic form (PDF and Autocad), other restorations and other related work not defined in other Bid Package Items. Also included is capping/abandonment of the existing hydrant line, as applicable, as well as salvaging, removal, and transport of the existing hydrant removed to the City's designated facility. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation.

- E. **Item No. 11 – Water Service Removal and Replacement (within Right-of-Way)** - Payment for the Water Service Connection shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the single, double, or triple water service lines and connections, varying in size, quantity and materials from ½" to 2" diameter, including service or band saddle, all fittings, corporation stops, angle stops, gate valves, valve box, riser, and cover, DR-9 polyethylene or copper water service piping to replace services of varying materials, casing piping, curb stops, check valves, and connecting existing or relocated meters to the proposed or existing water mains. Existing water service line abandonment is also included in this cost and includes abandoning the water services on existing water lines, placed out of service at the corporation or curb stop, cutting and capping the service lines and any incidental removal of the existing water service piping, "U-branches" and header piping/fittings (meter banks) as needed. This work shall include but not be limited to survey, clearing and grubbing, grading and regrading, removal and disposal of existing asphalt pavements of varying thickness, locating, protection and support of **all existing utilities**, coordination with all utility facility owners for relocations of existing utilities; including but not limited to gas mains and all other utilities, preparation and submittal of shop

drawings, preparation of a certified stormwater pollution prevention plan, installing stormwater pollution prevention systems, tree and shrub protection, trimming, removal and replacement, signage and mailbox protection, removal and replacement, fencing and gate protection and removal and replacement, power pole and guy wire support and relocation (including coordination and applicable fees) and removal and replacement, irrigation system protection or removal and replacement, piping trench excavation (including exploratory excavations), sheeting, shoring, bracing, dewatering, groundwater sampling, treatment and disposal, dewatering permit applications preparation and permitting, backfill material, reinforced concrete slabs and/or excavatable flowable fill, bedding, removal and disposal of unsuitable soils, compaction, limerock base or other base materials as necessary, prime and tack coats, removal of pavement and installation of temporary pavement (3" thickness required for FDOT roadways), full restoration and cleanup, sodding, grading and regrading, driveway removal and restoration of various materials including but not limited to; pavers, stamped concrete, brick and specialty materials, curbing removal and restoration, sidewalk removal and restoration, bacteriological testing, pressure testing, and all necessary accessories required for a complete installation, exfiltration trench and drainage piping removal and replacement, as-built documentation signed and sealed by a licensed PSM in hardcopy and electronic form (PDF and Autocad), other restorations and other related work not defined in other Bid Package Items. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation.

- F. **Item No. 12 – Reconnection of Existing Water Services** - Payment for all labor, equipment and material for all work necessary and required for reconnection of existing water services, on the eastern side of NE 6th Avenue connected to existing water mains, regardless of route and/or field condition, for a complete installation in accordance with the details and locations shown on the Plans, will be paid for at the unit price bid times the number of assemblies installed and accepted. The price bid shall be full compensation for each complete installation, ready for service, and shall include but not be limited to, the following: coordination with City forces for temporary system deactivation, all fittings, corporation stops, angle stops, brass quarter-turn ball valves, notification to property owners or other necessary authorizations from property owners for each individual property; reconnection, full restoration to existing conditions, all applicable items and work; and all other appurtenant and miscellaneous items and work necessary for a complete installation in accordance with the details, specifications and locations shown on the Plans. The plans show the approximate locations of reconnected services. The final locations shall be as field verified by the Contractor. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable reconnection of existing water services to the water main including all necessary restoration.

- G. **Item No. 13 – Meter Box Removal and Replacement** - Payment for the meter box removal and replacement shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to remove and replace the existing meter boxes and covers, resetting of the meter boxes to match existing grade conditions at the direction of the City or Engineer. This work shall include but not be limited to coordination with the City or Engineer as necessary, survey, clearing and grubbing, grading and regrading, removal and disposal of existing asphalt pavements of varying thickness, locating, protection and support of **all existing utilities**, coordination with all utility facility owners for relocations of existing utilities; including but not limited to gas mains and all other utilities, preparation and submittal of shop drawings, preparation of a certified stormwater pollution prevention plan, installing stormwater pollution prevention systems, tree and shrub protection, trimming, removal and replacement, signage and mailbox protection, removal and replacement, fencing and gate protection and removal and replacement, power pole and guy wire support and relocation (including coordination and applicable fees) and removal and replacement, irrigation system protection or removal and replacement, piping trench excavation (including exploratory excavations), sheeting, shoring, bracing, dewatering, groundwater sampling, treatment and disposal, dewatering permit applications preparation and permitting, isolating the existing water service as necessary for complete removal and replacement of the meter box, backfill material, excavatable flowable fill, bedding, removal and disposal of unsuitable soils, compaction, limerock base or other base materials as necessary, prime and tack coats, removal of pavement and installation of temporary pavement, full restoration and cleanup, sodding, grading and regrading, driveway removal and restoration of various materials including but not limited to; pavers, stamped concrete, brick and specialty materials, curbing removal and restoration, sidewalk removal and restoration, bacteriological testing, pressure testing, and all necessary accessories required for a complete installation, exfiltration trench and drainage piping removal and replacement, as-built documentation signed and sealed by a licensed PSM in hardcopy and electronic form (PDF and Autocad), other restorations and other related work not defined in other Bid Package Items. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable installation.
- H. **Item No. 14 – Cutting, capping, grouting, and abandonment of existing water mains** - For abandoning in place all existing water mains, hydrant mains and services larger than 2-inch in diameter within the project limits. Payment shall be lump sum for water mains to be placed out of service, completed and accepted. The price bid shall be full compensation and shall include; but not be limited to, coordination with City forces for temporary system deactivation; excavation (including exploratory excavations); cutting and capping, hauling and legal disposal of pipe segments cut and removed; removal of valve boxes and covers and delivering them to the City; furnishing and installing plugs or all necessary fittings for piping abandonment, furnishing and installing flowable grout,

pumping equipment and materials, exit and relief and/or viewing ports in mains, and pumping flowable grout to completely fill existing mains 6" and larger in diameter that are being placed out of service in accordance with the specifications. Mains less than 6-inch in diameter will be placed out of service but not grout filled. The price bid shall be full compensation for furnishing all materials, labor and equipment required for complete cutting, capping, grouting, abandonment, and taking the existing water mains out of service and all restoration efforts. Payment shall be at a lump sum amount for the entire project.

- I. **Item No. 15 - Milling and Disposal of a minimum 1" of asphalt pavement within FDOT roadways** - Payment for all labor, equipment and material for all work necessary and required for milling and resurfacing of a minimum of 1" of existing pavement of various thicknesses within FDOT roadways, as shown in the Pavement Restoration Plans and Details, saw cutting, removal, and disposal of existing pavement of all and varying thicknesses, any required field work by the Contractor to confirm existing pavement thicknesses prior to bidding, and replacement of a minimum of 1" of asphalt pavement to meet all FDOT standards and specifications and to match existing pavement grades at all tie-ins to adjacent roadways. Also included in this item is any adjustments of valve boxes, valve covers, manhole frames and rims, and any other surface features to maintain a level driving surface. Machine laid asphaltic concrete surface course for permanent paving, will be paid for at the unit price bid times the number of square yards (SY) of asphaltic concrete installed and accepted by the Engineer, as measured along the limits defined in the Pavement Restoration Plans and Details appended hereto. Greater widths are at the Contractors option and expense. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable machine-laid asphaltic concrete surface course installation and removal and disposal of existing concrete and other materials, as required and all restoration efforts.
- J. **Item No. 16 –Resurfacing of 1" of asphalt pavement within FDOT roadways** - Payment for all labor, equipment and material for all work necessary and required for resurfacing of 1" of existing pavement of various thicknesses within FDOT roadways, as shown in the Pavement Restoration Plans and Details, saw cutting, removal, and disposal of existing pavement of all thicknesses, any required field work by the Contractor to confirm existing pavement thicknesses prior to bidding, and replacement of 1" of asphalt pavement to meet all FDOT standards and specifications. Also included in this item is any adjustments of valve boxes, valve covers, manhole frames and rims, and any other surface features to maintain a level driving surface. Machine laid asphaltic concrete surface course for permanent paving, will be paid for at the unit price bid times the number of square yards (SY) of asphaltic concrete installed and accepted by the Engineer, as measured along the limits defined in the Pavement Restoration Plans and Details appended hereto. Greater widths are at the Contractors option and expense. The price bid shall be full compensation for furnishing all materials, labor and equipment required for a complete and usable machine-laid

asphaltic concrete surface course installation and removal and disposal of existing concrete and other materials, as required and all restoration efforts.

- K. **Item No. 17 – Furnish and Install Temporary Pavement Markings** - For temporary replacement of existing thermoplastic or painted pavement markings and messages, thermoplastic markings, reflective pavement markers, removed or obliterated by the Contractor's operation, or as indicated on the plans, in accordance with MUTCD, FDOT Standard Specifications for Road and Bridge Construction, and/or City Standards. Markings required for MOT operations shall be billed under the MOT pay item. Any remedial work that requires restoration of temporary pavement markings will be at no additional cost to the City. Payment shall be at the lump sum amount bid for the entire project.
- L. **Item No. 18 - Replacement of Permanent Pavement Markings** - For replacement of existing thermoplastic or painted pavement markings and messages, thermoplastic markings, reflective pavement markers, and other associated permanent pavement markings that are removed or obliterated by the Contractor's operation, or as indicated on the plans, in accordance with MUTCD, FDOT Standard Specifications for Road and Bridge Construction, and/or City Standards. Markings required for MOT operations shall be billed under the MOT pay item. Any remedial work that requires restoration of permanent pavement marking will be at no additional cost to the City. Payment shall be at the lump sum amount bid for the entire project.
- M. **Item No. 19 – Maintenance of Traffic (MOT)** - Payment for all labor for the design and preparation of signed and sealed MOT plans, permitting, flagman, barricades, VMS boards, signage, police presence, etc., and installation and removal of traffic control devices in various and changing work locations for the duration of the project per applicable authority having jurisdiction regarding MOT (vehicular and pedestrian), streets and lane closures. Payment shall be at the lump sum amount bid for the entire project.
- N. **Item No. 20 – Mobilization (60%)/Demobilization (40%), Bonds and Insurance** - The lump sum price bid for this item shall be full compensation for all mobilization/demobilization activities, including but not limited to bonds, insurance, transport of personnel, materials, equipment, and other incidentals to the site, all notifications to public including but not limited to flyers and other notifications, preparation of submittals including schedule, permit packages, and others, temporary facilities and offices, safety equipment and first aid supplies, project signs, field surveys, sanitary and other facilities required by the specifications, audio-video documentation of the existing site, any space required for staging, laydown, survey, storage, parking, security, etc., and all other activities necessary for complete mobilization/demobilization requirement for the contract. The payment items for mobilization shall not exceed 5% of the sum of Bid Items No. 1 through 19. Mobilization shall total 60% of the bid item cost total with demobilization totaling 40% of the bid item cost.

- O. **Item No. 21 – Owner’s Contingency (allowance)** - Included in this contingency are works associated with undefined conditions or conflicts developing from undefined conditions. All work authorized for payment will be authorized in writing by the City. Amount to be paid per undefined conditions or conflict shall be negotiated or agreed to by both parties. The City reserves the right to award any, all, or none of the money associated with this allowance.
- P. **Item No. 22 – Consideration for indemnification** - In recognition of the Contractor’s indemnification obligations, the City will pay to the Contractor the specific consideration of one hundred dollars (\$100.00). Payment of said specific consideration shall be made at the time of the payment of the first progress estimate and the Contractor shall acknowledge payment of this consideration by letter to the City after receipt of the progress payment.
- Q. **Item No. 23 – Permits, licenses and fee (allowance)** - The allowance indicated for this item is to pay for permits, licenses and other fees as stated herein which are required of the Contractor to submit for and obtain from various agencies having jurisdiction for construction of the project. The allowance shown on the Schedule of Bid Prices is an estimate of fees required. Payment will be based on the actual permit, license or fee paid directly to agency, documented by paid receipts, specifically excluding any labor, mark-up, overhead and profit, administration and other costs involved in obtaining permits or licenses or paying fees. The Contractor is responsible for submitting and obtaining all necessary regulatory agency permits other than those provided by the Owner and the Contractor is responsible for paying for all associated permit fees which are specifically excluded from this allowance and to be included in the various bid items herein. Fees specifically excluded from this allowance, include but are not limited to, reinspection fees, expired permit fees stand by time, failed test and bacteriological testing fees. The City reserves the right to award any, all, or none of the money associated with this allowance.

If the bidder makes an error in his addition of the total bid prices of the applicable items in the Quotation, the correct sum of its applicable bid item totals shall be the Total Bid.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

END OF SECTION

SECTION 01050

FIELD ENGINEERING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope of Work: The Contractor shall provide and pay for field engineering service for Project.
 - 1. Survey work required in execution of Work.
 - 2. Civil, structural, or other professional engineering services specified or required to execute Contractor's construction methods.
 - 3. The method of field staking for the construction of the Work shall be at the option of the Contractor. The Owner has provided the engineering surveys necessary to establish reference points which in his judgement are necessary to enable the Contractor to proceed with his work.
 - 4. The accuracy of any method of staking shall be the responsibility of the Contractor. All engineering for vertical and horizontal control shall be the responsibility of the Contractor.
 - 5. The Contractor shall be held responsible for the preservation of all stakes and marks. If any stakes or marks are carelessly or willfully disturbed by the Contractor, the Contractor shall not proceed with any work until he has established such points, marks, lines, and elevations as may be necessary for the prosecution of the Work.
 - 6. The Contractor shall retain the services of a registered land surveyor licensed in the State of Florida to identify existing control points and maintain a survey during construction.
- B. Related Requirements Described Elsewhere:
 - 1. Conditions of the Contract.
 - 2. Summary of Project: Section 01010.
 - 3. Project Record Documents: Section 01720.

1.02 QUALIFICATIONS OF SURVEYOR OR ENGINEER

- A. Qualified engineer or registered land surveyor, acceptable to the Owner and the Engineer.
- B. Registered professional engineer of the discipline required for the specific service on the Project, currently licensed in the State of Florida.

1.03 SURVEY REFERENCE POINTS

- A. Locate and protect control points prior to starting site work, and preserve all permanent reference points during construction.
 - 1. Make no changes or relocations without prior written notice to the Engineer.
 - 2. Report to the Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
 - 3. Require surveyor to replace Project control points which may be lost or destroyed at no additional cost to the Owner. Establish replacement based on original survey control.

1.04 PROJECT SURVEY REQUIREMENTS

- A. Establish a minimum of two (2) permanent bench marks on site, referenced to data established by survey control points.
 - 1. Record locations, with horizontal and vertical data, on Project Record Documents.
- B. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:
 - 1. Site improvements:
 - a. Stakes for grading, fill, and topsoil replacement.
 - b. Utility slopes and invert elevations.
 - 2. Batter boards for structure.
 - 3. Building foundation, column locations, and floor levels.
 - 4. Controlling lines and levels required for mechanical and electrical trades.

1.05 RECORDS

- A. Maintain a complete, accurate log of all control and survey work as it progresses.
- B. At the end of the project, submit a certified site survey at a minimum 1 inch equals 20 feet scale on sheets 24 inches by 36 inches (or scale of original drawings), indicating the corners and location of all new structures and slabs and elevations of wastewater and water facilities, pavement areas, sidewalks, finished floors, vaults, and above grade piping.
- C. At the end of the project, submit a certified survey at the same scale as the Engineer's line drawings indicating elevations and stationing at 100-foot pipe increments and at all valve and fitting locations.
- D. See Section 01720 – Project Record Documents, for project specific requirements.

1.06 SUBMITTALS

- A. Submit name and address of surveyor to the Engineer.
- B. On request of the Engineer, submit documentation to verify accuracy of field engineering work.
- C. Submit certificate signed by a registered engineer or surveyor certifying that elevations and locations of improvements are in conformance with the Contract Documents, or if not in conformance, certify as to variances from the Contract Documents.
- D. Submit drawings showing locations of all structures constructed. This drawing shall be included with the Project Record Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 CONTRACTOR'S EXECUTION

- A. The Contractor is responsible for all surveying necessary to produce accurate Record Drawings based on as-built surveying performed during the on-going work effort. If discrepancies exist between the as-built and installed work, the Contractor will be required excavate and expose the work as necessary to confirm accuracy and to meet the intent of the design plans and rectify any discrepancies at their cost. All FDEP/DOH separations must be met and any potential issues which may not allow for the required separations to be met must be immediately

brought to the attention of the Engineer. Not meeting FDEP or DOH separation requirements or other design requirements not previously agreed to by the Engineer or City will be unacceptable and at the risk of the Contractor to rectify at their cost.

END OF SECTION

SECTION 01065

PERMITS

PART 1 – GENERAL

1.01 General:

- A. The Contractor shall obtain and pay for all permits, licenses and fees related to the work. The Contractor shall also initiate the City's review and secure City approval prior to commencement of the work. Inspection by City personnel is required in addition to, not in lieu of, regulatory jurisdictional agencies and County department inspections. No project will be accepted until it has passed all inspections, including pavement installation or replacement and restoration.
- B. The Contractor shall familiarize himself with, and comply with, all requirements of required permits governing all work under this Contract. The Contractor's particular attention is called to any Special Conditions of the permits relating to construction procedures, excavation and backfill requirements, open trench restrictions, turbidity control, dewatering and sampling, traffic control, pavement restoration and all other general and special conditions. In the event any of the conditions of the permits are in conflict with the requirements of these Specifications, the most stringent conditions shall take precedence.
- C. The City has obtained the following permits for the project (located in the Appendix):

Agency	Permit No.
Miami-Dade County Department of Health	127614-075-DSGP
Florida Department of Transportation	2015-H-691-268
City of North Miami Building Department	BST00-2015-00072
Miami-Dade County Department of Regulatory and Environmental Resources	2016-WAT-EXT-00021
Miami-Dade Fire Department	Process #: M2016005922

Contractor is responsible to obtain any other permits required to complete construction.

- D. Any deviations from the Plans, Specifications or required permits, must first be approved by the City even if approval for the change has been given by the permitting agency.
- E. The Contractor shall fully assume all obligations and responsibilities, monetary and otherwise, imposed by the permits throughout the life of the project, including but not limited to:

1. Proper maintenance of permit documentation and field records.
 2. Proper maintenance of all permit-required field controls; including but not limited to the following:
 - a. Dewatering.
 - b. Chemical spill prevention.
 - c. Erosion, sedimentation, turbidity and dust retention.
 - d. Protection of storm drainage facilities.
 - e. Temporary vehicular and pedestrian traffic controls.
 3. Payment of fines resulting from permit non-compliance.
 4. Maintaining active permits and obtaining permit extensions when needed.
 5. Providing certifications of all materials and equipment installed.
 6. Performing successful inspections and tests required by the permits.
 7. Correcting any work that is not in compliance with permits.
 8. Performing successful equipment start-ups.
 9. Repair of any permanent traffic controls impacted by Contractor.
 10. Close-out of all permits.
- F. All surveying required by the project permits will be done by the Contractor's Florida registered Land Surveyor. This includes staking out limits of construction and Field Engineering per Section 01050.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01070

APPLICABLE STANDARDS

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. Wherever references are made in these specifications to any published standards, codes, standard specifications, or other published data of the various national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. References shall be to the latest versions currently in effect, unless otherwise specified by the City and/or Engineer. As a guide to the user of these specifications, the following acronyms or abbreviations which may appear in these specifications shall have the meanings indicated herein. Not all acronyms or abbreviations are included in the listing below. It shall be the Contractor's responsibility to inquire with the City or Engineer if they have any questions regarding abbreviations used within the Contract documents.
- B. The following is a partial list of typical abbreviations which may be used in the Specifications, and the organizations to which they refer. Abbreviated titles for other governing standards are used throughout these specifications and, although most of them are widely known, their complete titles are given below to avoid misunderstanding:
 - 1. AAMA - Architectural Aluminum Manufacturer's Association
 - 2. AASHTO - American Association of the State Highway and
 - 3. ACI - American Concrete Institute
 - 4. ACI - American Concrete Institute
 - 5. ACIFS - American Cast Iron Flange Standards
 - 6. ACOE - Army Corps of Engineers
 - 7. ACPA - American Concrete Pipe Association
 - 8. AFBMA - Anti-Friction Bearing Manufacturer's Association
 - 9. AGMA - American Gear Manufacturer's Association
 - 10. AGA - American Gas Association
 - 11. AGMA - American Gear Manufacturers Association
 - 12. AHGDA - American Hot Dip Galvanizers Association
 - 13. AI - The Asphalt Institute
 - 14. AIA - American Institute of Architects
 - 15. AISC - American Institute of Steel Construction
 - 16. AISI - American Iron and Steel Institute
 - 17. AITC - American Institute of Timber Construction
 - 18. AMCA - Air Moving and Conditioning Association
 - 19. ANSI - American National Standards Institute, Inc.
 - 20. APA - American Plywood Association

21. API - American Petroleum Institute
22. APHA - American Public Health Association
23. APWA - American Public Works Association
24. ASA - Acoustical Society of America
25. ASAE - American Society of Agriculture Engineers
26. ASCE - American Society of Civil Engineers
27. ASHRAE - American Society of Heating, Refrigerating, and Air-Conditioning Engineers
28. ASLE - American Society of Lubricating Engineers
29. ASME - American Society of Mechanical Engineers
30. ASMM - Architectural Sheet Metal Manual
31. ASSE - American Society of Sanitary Engineers
32. ASTM - American Society for Testing and Materials
33. AWI - Architectural Woodwork Institute
34. AWP - American Wood Preservers Association
35. AWPI - American Wood Preservers Institute
36. AWS - American Welding Society
37. AWWA - American Water Works Association
38. BHMA - Builders Hardware Manufacturer's Association
39. CMA - Concrete Masonry Association
40. CRSI - Concrete Reinforcing Steel Institute
41. CSA - Canadian Standards Association
42. DHI - Door and Hardware Institute
43. DIPRA - Ductile Iron Pipe Research Association
44. EIA - Electronic Industries Association
45. ETL - Electrical Test Laboratories
46. FBC - Florida Building Code
47. FDEP - Florida Department of Environmental Protection
48. FDOT - Florida Department of Transportation
49. FS - Federal Specifications
50. ICEA - Insulated Cable Engineers Association
51. IEEE - Institute of Electrical and Electronics Engineers
52. IES - Illuminating Engineering Society
53. IPCEA - Insulated Power Cable Engineers Association
54. ISA - Instrument Systems and Automation
55. ISO - International Organization for Standardization
56. MBMA - Metal Building Manufacturers Association
57. MDC DOH – Miami-Dade County Department of Health
58. MDC DRER – Miami-Dade County Department of Regulatory and Economic Resources
59. MMA - Monorail Manufacturers Association
60. MTI - Marine Testing Institute
61. NAAMM - National Association of Architectural Metal Manufacturers
62. NACE - National Association of Corrosion Engineers
63. NBS - National Bureau of Standards
64. NCPI - National Clay Pipe Institute

65. NEC - National Electrical Code
66. NEMA - National Electrical Manufacturer's Association
67. NFPA - National Fire Protection Association
68. NLMA - National Lumber Manufacturers Association
69. NIOSH - National Institute of Occupational Safety and Health
70. NIST - National Institute of Standards and Testing
71. NRCA - National Roofing Contractors Association
72. NSF - National Sanitation Foundation
73. OSHA - Occupational Safety and Health Administration
74. PCA - Portland Cement Association
75. SMACCNA - Sheet Metal and Air Conditioning Contractors National Association
76. SAE - Society of Automotive Engineers Standards
77. SHBI - Steel Heating Boiler Institute
78. SMACCNA - Sheet Metal and Air Conditioning Contractors National Association
79. SSPC - Steel Structures Painting Council
80. SSPWC - Standard Specifications for Public Works Construction
81. SFWMD - South Florida Water Management District
82. UL - Underwriters Laboratories, Inc.

C. Contractor shall, when required, furnish evidence satisfactory to the Engineer that materials and methods are in accordance with such standards where so specified.

D. In the event any questions arise as to the application of these standards or codes, copies shall be supplied on site by the Contractor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01100

SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.01 PUBLIC NOTIFICATION

- A. At least two (2) weeks prior to construction in a given area, Contractor shall use VMS boards at a minimum of two (2) locations per area to notify public of upcoming construction, or as required by FDOT for MOT permitting. VMS boards shall be used throughout construction to notify public of traffic restrictions and upcoming work within the project limits. Locations of the VMS boards are to be coordinated with the City and/or FDOT in advance of construction and are to be relocated as necessary in advance of construction.
- B. Contractor is to provide project notifications and associated information via door hanger handouts for residents that will be impacted during construction. The door hangers are to be provided for City review at the **Pre-Construction Meeting** for approval prior to distribution. The door hangers shall include, as a minimum, anticipated start date, brief project description, and measures to be taken to minimize adverse impacts to residents. Contractor to hang door hangers upon approval by the City.

1.02 SEQUENCE OF WORK

- A. The Contractor shall establish his work sequence based on the use of crews to facilitate completion of the construction within the specified contract time. Contractor shall submit a detailed phasing and project construction sequencing schedule and plan as required.

1.03 PUBLIC NUISANCE

- A. The Contractor shall not create a public nuisance including, but not limited to, encroachment on adjacent lands, flooding of adjacent lands, or excessive noise.
- B. Operating machinery or the performing of any kind of work of any nature whatsoever, which produces noises of any kind audible outside of any garage, shop or other place of business located adjacent to the residential sections of the City between the designated work hours on any day shall be a violation of the City's Code. In addition, other work hours as required for the various jurisdictional agency project permits must be followed at all times.

- C. Sound levels measured by the City shall not exceed 65 dBA or as otherwise required by City standards. This sound level shall be measured at the nearest property line of the nearest residence. Sound levels in excess of these values are sufficient cause to have the work halted until equipment can be quieted to these levels. Work stoppage by the Engineer or City for excessive noise shall not relieve the Contractor of the other portions of this Specification including, but not limited to, completion dates and bid amounts.
- D. No extra charge may be made for time lost due to work stoppage resulting from the creation of a public nuisance.

1.04 EXISTING UTILITIES

- A. Pipe Locations. All pipes shall be located substantially as indicated on the Drawings, but the Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required. No additional compensation will be allowed for use of additional fittings that are not agreed upon by the City and/or the Engineer prior to installation of the fittings.
- B. Utility Conflicts. Contractor must identify all locations where there is the possibility of conflicts with existing utilities. Contractor will promptly notify the City and Engineer in writing in accordance with these documents. Contractor acknowledges that resolving utility conflicts, can sometimes require permitting. The City will grant additional days to the Contractor to cover the length of unanticipated delay in writing. However, under no circumstances will the Contractor be eligible for remobilization costs.

1.05 ADDITIONAL TRAFFIC REQUIREMENTS

- A. Contractor will be responsible for submittal of Maintenance of Traffic (MOT) plans per to meet all jurisdictional authorities requirements for submittals within their right-of-way limits. MOT will also be submitted for all private roadways. Contractor shall be the responsible party relating to all aspects of traffic permitting. Approval must be received from the regulatory authority prior to commencement of any work within their right-of-way limits. No additional compensation will be provided for submittals, permitting or signed and sealed MOT plans to meet all regulatory agencies requirements.
- B. Night work or weekend work may be required for various areas within the project limits. The Contractor is responsible for costs associated with all night work including but not limited to, inspector costs, police or flagmen costs, signage and MOT costs and all other costs associated with night or weekend work.

- D. No excavations shall be left exposed or unattended while Contractor is not on premises.

1.06 RESTORATION

- A. Contractor shall be responsible for restoration of all disturbed or damaged areas during construction with equal or better quality, quantity, material and size. The extent of restoration limits or items within the project limits that may require restoration due to the Contractor's means and methods and associated work limits is not shown on the drawings and all restoration costs shall be the responsibility of Contractor. In addition, timely restoration shall be required by the Contractor. No more than 400 linear feet of trench length shall be opened at any one location. **The City and Engineer reserve the right to notify the Contractor of any areas that will be required to be restored in advance of larger scale restoration efforts; such as but not limited to, paving restoration, concrete restoration, sod restoration, driveway or curb restoration, landscape restoration or other restoration efforts which may need to be performed in advance.**

1.07 OPEN EXCAVATIONS

- A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by workmen.

1.08 TEST PITS

- A. Test pits for the purpose of locating underground pipeline or structures in advance of the construction shall be excavated and backfilled by the Contractor. Test pits shall be backfilled immediately after their purpose has been satisfied and maintained in a manner satisfactory to the Engineer. The costs for such test pits shall be borne by the Contractor.

1.09 JURISDICTIONAL DISPUTES

- A. It shall be the responsibility of the Contractor to pay all costs that may be required to perform any of the Work shown on the Drawings or specified herein in order to avoid any work stoppages due to jurisdictional disputes. The basis for subcontracting Work in question, if any, shall conform with precedent agreements and decisions on record with the Building and Construction Trades Department, AFL-CIO, dated June, 1973, including any amendments thereto.

1.10 HURRICANE AND STORM WARNINGS

- A. As the schedule for this project coincides, in part, with the recognized South Florida hurricane season, the Contractor's attention is drawn to the possibility of hurricane conditions, or severe storm conditions, occurring at the plant site during the course of Contract work.
- B. Within 30-days of the date of Notice-to-Proceed, the Contractor shall submit to the Engineer and City a Hurricane Preparedness Plan. The plan should outline the necessary measures which the Contractor proposes to perform at no additional cost to the City in case of a hurricane warning.
- C. In the event of inclement weather, or whenever the Engineer shall direct, the Contractor shall, and will cause Sub-Contractors to protect carefully the Work and materials against damage or injury by reasons of failure on the part of the Contractor to so protect the Work. Such Work and materials so damaged shall be removed and replaced at the expense of the Contractor.
 - 1. Hurricane Watch: Upon designation of a hurricane watch, Contractor shall be responsible for storing all loose supplies and equipment on the job site that may pose a danger. In addition, the Contractor shall remove all bulkheads and plugs in pipelines that would impede drainage in the case of flooding. Structures that may be in danger of floatation shall be flooded. The Contractor shall also cooperate with City personnel in protecting other structures at the site.
 - 2. Hurricane Warning: No mobile "temporary facility" under the control of the City of North Miami, or on City property, shall be staffed during a hurricane warning. Contractor facilities meeting these criteria shall comply.
- D. The Contractor is advised to take all necessary precautions to protect his equipment by moving it to higher ground if in an area is subject to flooding.

1.11 PESTS AND RODENTS

- A. The Contractor shall be responsible for maintaining the jobsite free from litter, rubbish and garbage and shall provide containers for the disposal of garbage and other materials that attract and are breeding places for pests and rodents. The Contractor shall provide the services of an exterminator to inspect the jobsite on a periodic basis and to provide service as required to control pests and rodents, as applicable and at no cost to the City.

1.12 COORDINATION OF WORK

- A. The Contractor shall cooperate fully so as to eliminate or minimize the creation of conflicts. Adjustments from time to time may be required in the Contractor's

work location and/or schedule provided a reasonable notice is given by the City or Engineer.

1.13 USE OF PUBLIC/PRIVATE STREETS

- A. The use of public/private streets and roads shall be such as to provide a minimum of an inconvenience to the public and to other traffic. Any earth or other excavated materials spilled from trucks shall be removed by the Contractor and the streets and roads cleaned to the satisfaction of the City or Engineer.
- B. Access to properties along the Project must be maintained at all times throughout the duration of the Project.

1.14 CHEMICALS

- A. All chemicals used during project construction, or furnished for project operations, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, must show approval of the State Department of Health, Florida Department of Environmental Protection and if required, also the EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with the manufacturer's instructions or recommended use procedures.

1.15 SAFETY AND HEALTH REGULATIONS

- A. The Contractor shall comply with the Department of Labor Safety & Health Regulations for construction promulgated under the Occupational Safety & Health Act of 1970, (PL 91-596) and under Section 107 of the Contract Work Hours & Safety Standards Act (PL 91-54).
- B. All equipment furnished and installed under this Contract shall comply to Part 1910, Occupational Safety & Health Standards & Amendments thereto.
- C. The Contractor shall comply with the Florida Trench Safety Act (latest edition).

1.16 STATE AND FEDERAL PERMITS

- A. The Contractor is required to comply with and meet all applicable permits. The City has provided the permits as included in the Appendix of the Contract documents. All other necessary permits shall be at the Contractor's cost and the Contractor shall be required to secure them prior to associated jurisdictional work. All conditions set forth in the permits shall become part of the Contract.

1.17 INSPECTION

- A. The authorized representatives and agents of the Environmental Protection Agency and Controlling State and Local Pollution Control Agencies shall be permitted to inspect all work, material, payrolls, personnel records, invoices of materials and any other relevant data and records. The City and Engineer shall be permitted access to any work area for the inspection of work and materials. The City may, at the Contractor's expense, order the uncovering or removal of any finished work if circumstances indicate faulty work or materials were used in the original installation. The City and Engineer shall also be permitted to inspect material invoices, payrolls or any other relevant data or records as may be necessary or required to satisfy the requirements of the Contract.

1.18 ENVIRONMENTAL PROTECTION

A. General:

1. Contractor shall comply with all Federal, State and Local laws and regulations controlling pollution of the environment. He shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, bitumens, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter. In the event of conflict between such laws and regulations and the requirements of the Specifications, the more restrictive requirements shall apply. Environmental protection requirements specified in other Sections shall be considered as supplementing the requirements of this Section.
2. Failure of the Contractor to fulfill any of the requirements of this Section may result in the City ordering the stopping of construction operations.
3. Failure on the part of the Contractor to perform the necessary measures to control erosion, siltation, and pollution will result in the City notifying the Contractor to take such measures. In the event that the Contractor fails to perform such measures within 24 hours after receipt of such notice, the City may stop the Work as provided above, or may proceed to have such measures performed by others. The cost of such work performed by others plus related fees by the Engineer will be deducted from monies due the Contractor on his Contract.
4. All erosion and pollution control features installed by the Contractor shall be acceptably maintained by the Contractor during the time that construction work is being done.
5. Repair or replace damaged or inoperative erosion and pollution control devices as directed by the Engineer or the City's Representative.

6. Where there is a high potential for erosion and possible water pollution, the Contractor shall not expose, by his construction methods or procedures, an area of erosive land at any one time larger than the minimum amount required for the proper and efficient construction operation. If the exposure of any incomplete work corresponding to the exposure period required for erosion is anticipated, temporary protective measures shall be taken to prevent the erosion or collapse of land in that immediate construction area.
- B. Erosion and Pollution Control Schedule: At or prior to the preconstruction conference, the Contractor shall submit to the City for his information, three (3) copies of his erosion and pollution control work schedule. This schedule shall show the time relationship between phases of the Work which must be coordinated to reduce erosion and pollution, and shall describe construction practices and temporary control measures which will be used to minimize erosion and pollution. The schedule shall also show the Contractor's proposed method of erosion control on haul roads and borrow and material pits, and his plan for disposal of waste materials or other sources of pollution. Maps or other documents may also be required to show the proposed final surface gradient of proposed borrow pits, soil type base course pits, and waste areas. No work shall be started until the erosion and pollution control schedules and methods of operations have been submitted to the City for his information.
- C. Air Pollution Controls:
1. Contractor shall control dust caused by his operations in the construction of the Project, including but not specifically limited to the following:
 - a. Clearing, grubbing, and stripping.
 - b. Excavation and placement of embankment.
 - c. Cement and aggregate handling.
 - d. Limerock stabilization.
 - e. Use of haul roads.
 - f. Sandblasting or grinding.
 2. Contractor shall control air pollution from the following causes in constructing the project:
 - a. Volatiles escaping from asphalt and cutback materials.
 - b. Use of herbicides or fertilizers.
 3. Control of dust and other air pollutants by the Contractor shall include:
 - a. Exposing the minimum area of land.

- b. Applying temporary mulch with or without seeding.
 - c. Use of water sprinkler trucks.
 - d. Use of covered haul trucks.
 - e. Use of stabilizing agents in solution.
 - f. Use dust palliatives and penetration asphalt on temporary roads.
 - g. Use of wood chips in traffic and work areas.
 - h. Use of vacuum-equipped sandblasting systems.
 - i. Use of plastic sheet coverings.
 - j. Restricting the application rate of herbicides to recommended dosage. Materials shall be covered and protected from the elements. Application equipment and empty containers shall not be rinsed and discharged so as to pollute a stream, river, lake, pond, water impoundment, or the ground water.
 - k. Relay of operations until climate or wind conditions dissipate or inhibit the potential pollutants.
- D. Open Burning of Combustible Wastes: No open burning of combustible waste materials or vegetation shall be permitted. All waste materials shall be removed from the site or within public rights-of-way and disposed in a legal manner.
- E. Permanent and Temporary Water Pollution Control (Soil Erosion):
- 1. Sufficient precautions shall be taken during construction to minimize the run-off of polluting substances such as silt, clay, fuels, oils, bitumens, calcium chloride, or other polluting materials harmful to humans, fish, or other life, into the supplies and surface waters of the State. Control measures must be adequate to assure that turbidity in the receiving water will not be increased more than allowed by the State or controlling agency. Such measures may consist of construction of berms, dikes, dams, drains and sediment basins, or use of fiber mats, woven plastic filter cloths, gravel, mulches, quick growing grasses, sod, bituminous spray and other erosion control devices or methods approved by the State or controlling agency.
 - 2. The Contractor shall promptly clear all waterways and drainage patterns of false work, piling, debris, or other obstructions placed during construction work and not a part of the finished work.
 - 3. The Contractor shall remove and dispose of silt accumulations as directed by the Engineer or the City's Representative.
 - 4. If new and additional erosion control structures are to be installed, under this project, to prevent possible future erosion as a result of work under this contract, they shall be constructed concurrently with the other work, as early as possible, and as conditions permit.

1.19 TREE AND SHRUB PROTECTION AND TRIMMING

- A. Contractor shall exercise care to protect all trees and shrubs designated to remain. Trees and shrubs outside construction limits shall remain and shall be protected and where damaged, restored to original condition. Contractor shall obtain approval from the City prior to removing or trimming any trees. Trees damaged within construction limits due to negligence shall be restored or replaced to meet original condition.
- B. Tree limbs which interfere with construction operations and are approved for pruning shall be neatly cut with sharp pruning instruments; do not break or chop. All cut faces shall be coated with an approved tree pruning compound which is waterproof, antiseptic, elastic and free of kerosene, coal tar, creosote and other substances harmful to plants. Pruning operations shall be extended to restore the natural shape of the entire tree or shrub. Do not allow fires under or adjacent to trees or other plants which are to remain.
- C. Contractor shall protect tree and shrub root systems. Do not store construction materials, debris or excavated materials beyond construction limits. Do not permit vehicles or construction equipment beyond the limits of utility line construction. Restrict foot traffic to prevent excessive compaction of soil over root system. Excavated material shall be stockpiled away from tree drip lines as approved by the Engineer. Protect tree and shrub root systems from damage due to noxious materials in solution caused by run-off or spillage during construction operations, or drainage from stored materials. Protect root systems from flooding, erosion or excessive wetting resulting from dewatering operations. Excavate within the drip line of trees only when approved by the Engineer. Where trees are designated to remain within the limits of construction and trenching for utilities is required within tree drip lines, cut roots with sharp pruning instruments; do not break or chop. Paint roots over 2" caliper with approved tree pruning compound.
- D. Trees damaged by construction operations shall be repaired promptly after damage occurs to prevent progressive deterioration of damaged trees. Removed trees, branches, roots and other excess materials shall be removed from the construction site to an approved landfill at the expense of the Contractor.

1.20 SITE CLEANUP

- A. The Contractor shall keep the working area free at all times of tools, materials and equipment not essential to the progress of the Work. Debris, waste materials, and rubbish shall be properly disposed of and not allowed to accumulate. If the

Contractor should fail to do this, the City will make the necessary arrangements to effect the cleanup by others and will back charge the cost to the Contractor. If such action becomes necessary on the part of and in the opinion of the City, the City will not be responsible for the inadvertent removal of material which the Contractor would not have disposed of had he effected the required cleanup.

- B. Where material or debris has washed or flowed into or been placed in watercourses, ditches, gutters, drains, catch basins, or elsewhere as result of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during progress of the Work, and the ditches, channels, drains etc., kept in a clean and neat condition.
- C. On or before the completion of the Work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by him; shall remove all rubbish from any grounds he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations, in a neat and satisfactory condition.
- D. The Contractor shall restore the entire project site to its original or better condition, with the exception of any area(s) designated for alteration by the Contract Documents. The Contractor shall restore or replace; when and as directed, any public or private property damaged by his work, equipment, or employees to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration.
- E. The Contractor shall thoroughly clean all materials and equipment installed by him and his subcontractors and on completion of the Work shall deliver it undamaged and in fresh and new appearing condition.

1.21 LAWS AND REGULATIONS

- A. It shall be the responsibility of the Contractor to give all notices and comply with all the laws, rules, regulations, ordinances, etc., that may be applicable at the time the Work is started on the project. Should the Contractor discover the Drawings or Specifications are contradictory to, or in variance with the above, he shall notify the Engineer immediately, in writing, in order that any required changes or modifications can be made. It is not the Contractor's responsibility to make certain that the Drawings or Specifications are in non-compliance with any of the above; however, should he be aware of any existing discrepancy, or have reason to

believe such may exist and performs work without proper notice to the Engineer, the Contractor shall be responsible for any cost involved in making the necessary alterations or corrections.

1.22 CONTRACTOR'S USE OF PREMISES

- A. All project construction work will be accomplished on the City's property, public/private rights-of-way/easements or within temporary construction easements and the Contractor shall confine his activity to those designated areas. The Contractor shall not enter upon private property for any reason without securing prior permission from the property City. Such permission, including any stipulations, shall be in writing and a copy shall be delivered to the Engineer prior to the Contractor's entry or occupation of the subject property. This requirement will be rigidly enforced, particularly with regard to the utilization of vacant areas adjacent to the work site for the storage of materials or parking equipment.
- B. The Contractor shall perform his work in such manner that he will not damage adjacent public or private property. Any damage to existing physical structures or utility services shall be repaired or restored promptly at no expense to the City.
- C. The Contractor shall avoid damage to and preserve all existing vegetation (grass, shrubs, trees, etc.) on or near the work area which do not, within reason, interfere with construction. The Contractor will be responsible for and required to replace or restore all such vegetation damaged or destroyed at no cost to the City. The Contractor will also be responsible for any unauthorized cutting or damage to trees, shrubs, etc., and also damage caused by careless operation of equipment, storage of materials and rutting or tracking of grass by equipment.
- D. The Contractor shall conduct access, hauling, filling, and storage operations as specified herein and as shown on the Contract Drawings.
 - 1. On-site borrow areas are designated as follows: Suitable material, as approved by Engineer, from excavations for project structures. Any additional borrow material required shall be provided by the Contractor from off-site.
 - 2. On-site spoil areas will become property of the Contractor and are to be disposed off-site.
- E. Construct all fill areas so runoff will not flood improved areas.
- F. All connections to existing piping systems shall be made as shown or indicated on the Drawings after consultation, cooperation, and coordination with the City. Some such connections may have to be made during off-peak hours (late night, early morning, or weekend hours). The Contractor shall give a minimum of 72 hours notice to the City when tie-ins with the existing utilities are required.

- G. For major utility pipeline tie-ins and relocations, the Contractor shall submit a detailed Plan of Action for review and approval by the City and the Engineer. No major utility relocation or tie-ins shall proceed until the Plan of Action for that Work is approved.

1.23 HAZARDOUS LOCATIONS

- A. The Contractor shall be responsible for identification of hazardous locations, appropriate construction methods, and all other safety issues.

1.24 ADDITIONAL PROVISIONS

- A. The Contractor shall provide at his own cost all necessary temporary facilities for access to, and for protection of, all existing structures. The Contractor is responsible for all damage to existing structures, equipment, and facilities caused by his construction operations, and must repair all such damage when and as ordered by the Engineer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 PRECONSTRUCTION

A. A mandatory preconstruction meeting will be held to acquaint representatives of the City and various other agencies with those in responsible charge of the Contractor's activities for the project. Unless otherwise directed by the City, no construction activities relating to this contract shall commence until after the pre-construction meeting is adjourned, and until any pending business from the meeting has been addressed by the Contractor to the satisfaction of the City and Engineer. The meeting will cover such subjects as the following:

1. Insurance certificates
2. Permits and licenses
3. Affirmative action employment
4. Construction schedules
5. Cost breakdown and applications for payment
6. Material deliveries, storage and payments
7. Shop drawings and submittals
8. Job-site inspection by the Engineer
9. Safety and emergency action procedures
10. Operations of the existing utilities
11. Field offices, security and other housekeeping procedures
12. List of subcontractors
13. Liquidated damages
14. Communications
15. Coordinating
16. All other appropriate matters

1.02 PROGRESS

A. A progress meeting shall be held on a once-per-month basis for the purpose of coordinating and expediting the work. The Contractor, as a part of his obligations under the Contract, shall attend in person or by an authorized representative to attend and to act on his behalf. The Engineer will conduct such meetings and as necessary, with the Contractor's input, issue an agenda.

B. In addition, the Engineer or Contractor may call for special job site meetings for the purpose of resolving unforeseen problems or conflicts which may impede the construction schedule. The City will prepare a brief summary report of the decisions or understandings concerning each of the items discussed at the meeting.

- C. At weekly progress meetings, the Contractor shall submit to the Engineer for review a look back schedule for work completed within the last three (3) weeks, a current look ahead schedule for the work anticipated to be completed within the next three (3) weeks, and an overall project progress schedule. See Section 01370 – Construction Progress Schedule for detailed specifics.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01310

CONSTRUCTION PROGRESS SCHEDULES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Promptly after award of the Contract, prepare and submit to the Engineer estimated construction progress schedules demonstrating complete fulfillment of all Contract requirements utilizing a Critical Path Method (hereinafter referred to as CPM) in planning, coordinating, and performing the Work under this Contract (including all activities of subcontractors, equipment vendors, and suppliers). The principles and definition of CPM terms used herein shall be as set forth in the Associated General Contractors of America (AGC) publication, Construction Planning & Scheduling Manual, Copyright 1984, but the provisions of this Specification shall govern the planning, coordinating, and performance of the Work.
2. Submit revised progress schedules on a monthly basis. No partial payments shall be approved until there is an approved construction progress schedule on hand.

B. Related Requirements Described Elsewhere:

1. Summary of Work: Section 01010.
2. Project Meetings: Section 01200.
3. Shop Drawings: Section 01340.
4. Schedule of Values: Section 01370.

1.02 QUALIFICATIONS

- ###### A.
- A statement of computerized CPM capability shall be submitted in writing prior to the award of the Contract and shall verify that either Contractor's organization has in-house capability to use the CPM technique or that Contractor will employ a CPM consultant who is so qualified.

- B. In-house capability shall be verified by description of construction projects to which Contractor or Contractor's consultant has successfully applied computerized CPM and shall include at least two (2) projects valued at least half the expected value of this project.

1.03 FORM OF SCHEDULES

- A. Prepare schedules in the form of a horizontal bar chart.
 - 1. Provide a separate horizontal bar for each trade or operation within each structure or item.
 - 2. Horizontal time scale:
 - a) Show starting and completion dates for each activity in terms of the number of days after Notice to Proceed. All completion dates shown shall be within the period specified for contract completion.
 - b) Identify the first work day of each month.
 - 3. Scale and Spacing: Sufficient to allow space for notations and future revisions.
 - 4. Maximum Sheet Size: 24 inches by 36 inches.
- B. Format of Listings: The chronological order of the start of each item of work for each structure.
- C. Identification of Listings: By major specification section numbers as applicable and by structure.
- D. Construction Progress Schedules shall be computer generated using software equal to Primavera Project Planner for Windows by Primavera Systems, Inc., Microsoft Project, or approved equal.

1.04 CONTENT OF SCHEDULES

- A. Construction Progress Schedule:
 - 1. Show the complete sequence of construction by activity and by structure.
 - 2. Show the dates for the beginning and completion of each major element of construction in no more than a two (2) week increment scale. Specifically list, but do not limit to:
 - a. Shop Drawing Schedule.

- b. Installation of temporary facilities.
 - c. Site clearing.
 - d. Site utilities.
 - e. Foundation work.
 - f. Structural framing.
 - g. Subcontractor work.
 - h. Equipment installations.
 - i. Finishings.
 - j. Instrumentation.
 - k. Electrical.
 - l. Painting.
 - m. Operator training and receipt of operation and maintenance manuals.
 - n. Equipment Testing.
 - o. Equipment and process start-up.
 - p. Receipt of spare parts.
 - q. Project closeout.
- 3. Show projected percentage of completion for each item, as of the first day of each month.
 - 4. Show projected dollar cash flow requirements for each month of construction and for each activity as indicated by the approved Schedule of Values.
- B. Submittals for construction progress schedules shall be in accordance with Section 01340: Shop Drawings. Indicate on the schedule the following:
- 1. The dates for Contractor's submittals.
 - 2. The dates submittals will be required for Owner-furnished products, if applicable.

3. The dates approved submittals will be required from the Engineer.
- C. A typewritten list of all long lead items (equipment, materials, etc.).
- D. To the extent that the progress schedule or any revised progress schedule shows anything not jointly agreed upon or fails to show anything jointly agreed upon, it shall not be deemed to have been approved by the Engineer. Failure to include any element of work required for the performance of this Contract shall not excuse the Contractor from completing all work required within any applicable completion date, notwithstanding the Engineer's approval of the progress schedule.
- E. Scheduling Constraints: The work within Owner's property must be completed within the maximum number of days start to finish, as indicated in the Contract. Additionally, work must proceed on a continuous basis, without stoppages, except for nights and weekends. There shall be no lapses between phases of construction.

1.05 PROGRESS REVISIONS

- A. Indicate progress of each activity to date of submission.
- B. Show changes occurring since previous submission of schedule:
 1. Major changes in scope.
 2. Activities modified since previous submission.
 3. Revised projections of progress and completion.
 4. Other identifiable changes.
- C. Provide a narrative report as needed to define:
 1. Problem areas, anticipated delays, and the impact on the schedule.
 2. Corrective action recommended, and its effect.
 3. The effect of changes on schedules of other prime contractors.
- D. If the Work falls behind the critical path schedule by two (2) weeks or more, the Contractor shall prepare a recovery schedule.

1.06 SUBMISSIONS

- A. Submittal Requirements.

1. Logic network and/or time-phased bar chart, computer generated.
2. Computerized network analysis:
 - a. Sort by early start
 - b. Sort by float
 - c. Sort by predecessor/successor
3. Narrative description of the logic and reasoning of the schedule.

B. Time of Submittals.

Within ten (10) working days after Notice to Proceed, Contractor shall submit a network diagram describing the activities to be accomplished in the project and their dependency relationships, (predecessor/successor) as well as a tabulated schedule as herein defined. The total length of time indicated on the initial CPM schedule shall equal the exact number of days in the Contract Time as defined in the Contract Documents. The schedule produced and submitted shall also indicate calendar dates, including project starting and completion dates, based on the Contract Commencement and completion dates indicated in the Notice to Proceed. The Engineer will complete the review of the complete schedule within fifteen (15) working days after receipt. During the review process, the Engineer may meet with a representative of Contractor to review the proposed plan and schedule to discuss any clarifications that may be necessary.

- C. Within ten (10) working days after the conclusion of the Engineer's review period, Contractor shall revise the network diagram as required and resubmit the network diagram and a tabulated schedule produced therefrom. The revised network diagram and tabulated schedule shall be reviewed and accepted or rejected by the Engineer within fifteen (15) working days after receipt. The network diagram and tabulated schedule, when accepted by the Engineer, shall constitute the project work schedule unless a revised schedule is required due to substantial changes in the Work, a change in Contract Time or a recovery schedule is required and requested.

- D. Acceptance. The finalized schedule will be acceptable to the Engineer when, in the opinion of the Engineer, it demonstrates an orderly progression of the Work to completion in accordance with the Contract Documents. Such acceptance will neither impose on the Engineer responsibility for the progress or scheduling of the Work nor relieve Contractor from full responsibility therefore. The finalized schedule of shop drawing submittals will be acceptable to the Engineer when, in the opinion of the Engineer, it demonstrates a workable arrangement for processing the submittals in accordance with the requirements. The finalized

Schedule of Values (lump sum price breakdown), as applicable, will be acceptable to the Engineer as to form and content when, in the opinion of the Engineer, it demonstrates a substantial basis for equitably distributing the Contract Price. When the network diagram and tabulated schedule have been accepted, the Contractor shall submit to the Engineer six (6) copies of the time-scaled network diagram, six (6) copies of a computerized tabulated schedule in which the activities have been sequenced by numbers, six (6) copies of a computerized tabulated schedule in which the activities have been sequenced by early starting date, and six (6) copies of a computerized, tabulated schedule in which activities have been sequenced by total float, and six (6) copies sorted by predecessor/successor.

- E. Revised Work Schedules. Contractor, if requested by the Engineer, shall provide a revised work schedule if, at any time, the Engineer considers the completion date to be in jeopardy because of "activities behind schedule." The revised work schedule shall include a new diagram and tabulated schedule conforming to the requirements of Paragraph 1.09 herein, designed to show how Contractor intends to accomplish the Work to meet the completion date. The form and method employed by Contractor shall be the same as for the original work schedule. No payment will be made if activities fall more than two (2) weeks behind schedule and a revised work schedule is not furnished.
- F. Schedule Revisions. The Engineer may require Contractor to modify any portions of the work schedule that become infeasible because of "activities behind schedule" or for any other valid reason. An activity that cannot be completed by its original latest completion date shall be deemed to be behind schedule. No change may be made to the sequence, duration, or relationships of any activity without approval of the Engineer.

1.07 DISTRIBUTION

- A. Distribute copies of the reviewed schedules to:
 - 1. Engineer.
 - 2. Jobsite file.
 - 3. Subcontractors.
 - 4. Other concerned parties.
 - 5. Owner (two copies).
- B. Instruct recipients to report promptly to the Contractor, in writing, any problems anticipated by the projections shown in the schedules.

1.08 CHANGE ORDERS

- A. Upon approval of a change order, the approved changes shall be reflected in the next scheduled revision or update submittal of the construction progress schedule by the Contractor.

1.09 CPM STANDARDS

- A. CPM, as required by this Section, shall be interpreted to be generally as outlined in the Associated General Contractor's (AGC) publication, Construction Planning & Scheduling Manual, latest edition.
- B. Work schedules shall include a graphic network and computerized, tabulated schedules as described below. To be acceptable the schedule must demonstrate the following:
 - 1. A logical succession of work from start to finish.
 - 2. Definition of each activity. Activities shall be identified by major specification section numbers, as applicable, and by major structure.
 - 3. A logical flow of work crews/equipment (crews are to be defined by manpower category and man-hours; equipment by type and hours).
 - 4. Show all work activities and interfaces including submittals as well as major material and equipment deliveries.
- C. Networks.
 - 1. The CPM network, or diagram, shall be in the form of a time-scaled diagram of the customary activity-on-type and may be divided into a number of separate pages with suitable notation relating the interface points among the pages. Notation on each activity line shall include a brief work description and a duration, as described in Paragraph 1.09, D. herein.
 - 2. All construction activities and procurement shall be indicated in a time-scaled format, and a calendar shall be shown on all sheets along the entire sheet length. Each activity arrow shall be plotted so the beginning and completion dates of said activity can be determined graphically by comparison with the calendar scale. All activities shall be shown using the

symbols that clearly distinguish between critical path activities, non-critical path activities, and float for each non-critical activity. All non-critical path activities shall show estimated performances time and float time in scaled form.

- D. The duration indicated for each activity shall be in calendar days and shall represent the single best time considering the scope of the work and resources planned for the activity including time for inclement weather. Except for certain non-labor activities, such as curing concrete or delivering materials, activity durations shall not exceed fourteen (14) days nor be less than one (1) day unless otherwise accepted by the Engineer.
- E. Tabulated Schedules. The initial schedule shall include the following minimum data for each activity.
 - 1. Activity Beginning and Ending Numbers (i-j numbers) (single activity numbers may be used).
 - 2. Duration.
 - 3. Activity Description.
 - 4. Early Start Date (Calendar Dated).
 - 5. Late Start Date (Calendar Dated).
 - 6. Early Finish Date (Calendar Dated).
 - 7. Late Finish Date (Calendar Dated).
 - 8. Identified Critical Path.
 - 9. Total Float (Note: No activity may show more than 20 days float).
 - 10. Cost of Activity.
 - 11. Equipment Hours, by type; Man-Power Hours, by crew or trade.
- F. Project Information. Each tabulation shall be prefaced with the following summary data.
 - 1. Project Name.
 - 2. Contractor.
 - 3. Type of Tabulation (Initial or Updated).

4. Project Duration.
5. Project Scheduled Completion Date.
6. Effective or Starting Date of the Schedule.
7. New Project Completion Date and Project Status (if an updated or revised schedule).
8. Actual Start Date and Actual Finish Date (for all updated schedules.)

1.10 SCHEDULE MONITORING

- A. At not less than monthly intervals or when specifically requested by Engineer, Contractor shall submit to the Engineer a computer printout of an updated schedule for those activities that remain to be completed. Typically, the updated schedule will be submitted with the application for payment as specified below.
- B. The updated schedule shall be submitted in the form, sequence, and number of copies requested for the initial schedule.

1.11 PROGRESS MEETINGS

For the monthly progress meeting, Contractor shall submit a revised CPM schedule and a three-week look-ahead schedule, showing all activities completed, in progress, uncompleted, or scheduled to be worked during the weeks. The three weeks include the current week plus the next two weeks. All activities shall be from the approved CPM and must be as shown on the CPM unless behind or ahead of schedule. One copy of the revised CPM schedule shall be submitted with each copy of that month's application for payment, six (6) copies minimum.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01340

SHOP DRAWINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. The Contractor shall submit to the Engineer for review and approval, such Shop Drawings, Test Reports, and Product Data on materials and equipment (hereinafter in this Section called Data), and material samples (hereinafter in this Section called Samples) as are required for the proper control of work, including but not limited to those Shop Drawings, Data, and Samples for materials and equipment specified elsewhere in the Specifications and in the Drawings.
2. Within fourteen (14) calendar days after the Notice to Proceed, the Contractor shall submit to the Engineer a complete list of preliminary Data on items for which Shop Drawings are to be submitted. Included in this list shall be the names of all proposed manufacturers furnishing specified items. Review of this list by the Engineer shall in no way expressed or implied relieve the Contractor from submitting complete Shop Drawings and providing materials, equipment, etc., fully in accordance with the Contract Documents. This procedure is required in order to expedite final review of Shop Drawings.
3. The Contractor is to maintain an accurate updated submittal log and will bring this log to each scheduled progress meeting with the Owner and the Engineer. This log should include the following items:
 - a. Submittal description and number assigned.
 - b. Date to Engineer.
 - c. Date returned to Contractor (from Engineer).
 - d. Status of submittal (Approved, Approved as Noted, Amend and Resubmit, and Rejected).
 - e. Date of resubmittal and return (as applicable).
 - f. Date material release (for fabrication).
 - g. Projected date of fabrication.
 - h. Projected date of delivery to site.
 - i. Status of O&M manuals submittal.
 - j. Specification Section.
 - k. Drawings sheet number.

- B. Related Requirements Described Elsewhere:
 - 1. Construction Progress Schedules: Section 01310.
 - 2. Material and Equipment: Section 01600.
 - 3. Project Record Documents: Section 01720.

1.02 CONTRACTOR'S RESPONSIBILITY

- A. It is the responsibility of the Contractor to check all drawings, data and samples prepared before submitting them to the Engineer for review. Each and every copy of the Drawings and data shall bear the Contractor's stamp showing that they have been so checked. Shop drawings submitted to the Engineer without the Contractor's stamp will be returned to the Contractor for conformance with this requirement. Shop drawings shall indicate any deviations in the submittal from requirements of the Contract Documents. If the Contractor takes exception to the specifications, the Contractor shall note the exception in the letter of transmittal to the Engineer.
- B. Determine and verify:
 - 1. Field measurements.
 - 2. Field construction criteria
 - 3. Catalog numbers and similar data.
 - 4. Conformance with Specifications.
- C. The Contractor shall furnish the Engineer a schedule of Shop Drawing submittals fixing the respective dates for the submission of shop and working drawings, the beginning and ending of manufacture, testing, and installation of materials, supplies, and equipment. This schedule shall indicate those that are critical to the progress schedule.
- D. The Contractor shall not begin any of the work covered by a Shop Drawing, Data, or a Sample returned for correction until a revision or correction thereof has been reviewed and returned to him, by the Engineer, with approval.
- E. The Contractor shall submit to the Engineer all drawings and schedules sufficiently in advance of construction requirements to provide no less than thirty (30) calendar days for checking and appropriate action from the time the Engineer receives them.
- F. All submittals shall be accompanied with a transmittal letter prepared in duplicate containing the following information:

1. Date.
 2. Project Title and Number.
 3. Contractor's name and address.
 4. The number of each Shop Drawings, Project Data, and Sample submitted.
 5. Notification of Deviations from Contract Documents.
 - a. The Contractor shall indicate in **bold type** at the top of the cover sheet of submittal of shop drawing if there is a deviation from the Drawings, Specifications, or referenced specifications or codes.
 - b. The Contractor shall also list any deviations from the Drawings, Specifications, or referenced specifications or codes and identify in green ink prominently on the applicable Shop Drawings.
 6. Submittal Log Number conforming to Specification Section Number.
- G. The Contractor shall submit seven (7) copies of descriptive or product data information and Shop Drawings to the Engineer plus the number of copies which the Contractor requires returned. All blueprint Shop Drawings shall be submitted with one (1) set of mylar reproducibles and the same number of prints as Shop Drawings, plus the number of copies which the Contractor requires returned. The Engineer will review the blueprints and return to the Contractor the set of marked-up mylar reproducibles with appropriate review comments.
- H. The Contractor shall be responsible for and bear all costs of damages which may result from the ordering of any material or from proceeding with any part of Work prior to the completion of the review by the Engineer of the necessary Shop Drawings.
- I. The Contractor shall be fully responsible for observing the need for and making any changes in the arrangement of piping, connections, wiring, manner of installation, etc., which may be required by the materials/equipment he proposes to supply both as pertains to his own work and any work affected under other parts, headings, or divisions of the Drawings and Specifications.
- J. The Contractor shall not use Shop Drawings as a means of proposing alternate items to demonstrate compliance with the Drawings and Specifications.

- K. Each submittal will bear a stamp indicating that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal as illustrated below.

(OWNER'S NAME)	
(PROJECT NAME)	
(PROJECT NUMBER)	
SHOP DRAWING NO.: _____	
SPECIFICATION SECTION: _____	DRAWING NO. _____
WITH RESPECT TO THIS SHOP DRAWING OR SAMPLE, I HAVE DETERMINED AND VERIFIED ALL QUANTITIES, DIMENSIONS, SPECIFIED PERFORMANCE CRITERIA, INSTALLATION REQUIREMENTS, MATERIALS, CATALOG NUMBERS, AND SIMILAR DATA WITH RESPECT THERETO AND REVIEWED OR COORDINATED THIS SHOP DRAWING OR SAMPLE WITH OTHER SHOP DRAWINGS AND SAMPLES AND WITH THE REQUIREMENTS OF THE WORK AND THE CONTRACT DOCUMENTS.	
_____ NO VARIATION FROM CONTRACT DOCUMENTS	
_____ VARIATION FROM CONTRACT DOCUMENTS AS SHOWN	
(CONTRACTOR'S NAME)	
(CONTRACTOR'S ADDRESS)	
BY: _____	DATE: _____
AUTHORIZED SIGNATURE	

- L. Drawings and schedules shall be checked and coordinated with the work of all trades and sub-contractors involved, before they are submitted for review by the Engineer and shall bear the Contractor's stamp of approval as evidence of such checking and coordination. Drawings or schedules submitted without this stamp of approval shall be returned to the Contractor for resubmission.

1.03 ENGINEER'S REVIEW OF SHOP DRAWINGS

- A. The Engineer's review of Shop Drawings, Data, and Samples as submitted by the Contractor will be to determine if the items(s) generally conforms to the information in the Contract Documents and is compatible with the design concept. The Engineer's review and exceptions, if any, will not constitute an approval of dimensions, connections, quantities, and details of the material, equipment, device, or item shown.
- B. The review of drawings and schedules will be general, and shall not be construed:
1. As permitting any departure from the Contract Documents.
 2. As relieving the Contractor of responsibility for any errors, including details, dimensions, and materials.

3. As approving departures from details furnished by the Engineer, except as otherwise provided herein.
- C. If the drawings or schedules as submitted describe variations and show a departure from the Contract Documents which the Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or contract time, the Engineer may return the reviewed drawings without noting an exception.
- D. "Approved As Noted" - Contractor shall incorporate Engineer's comments into the submittal before release to manufacturer. The Contractor shall send a letter to the Engineer acknowledging the comments and their incorporation into the Shop Drawing.
- E. "Amend And Resubmit" - Contractor shall resubmit the Shop Drawing to the Engineer. The resubmittal shall incorporate the Engineer's comments highlighted on the Shop Drawing.
- F. "Rejected" - Contractor shall correct, revise and resubmit Shop Drawing for review by Engineer.
- G. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, to revisions other than the corrections requested by the Engineer on previous submissions. The Contractor shall make any corrections required by the Engineer.
- H. If the Contractor considers any correction indicated on the drawings to constitute a change to the Drawings or Specifications, the Contractor shall give written notice thereof to the Engineer.
- I. When the Shop Drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.
- J. No partial submittals will be reviewed. Submittals not deemed complete will be stamped "Rejected" and returned to the Contractor for resubmittal. Unless otherwise specifically permitted by the Engineer, make all submittals in groups containing all associated items for:
 1. Systems.
 2. Processes.

3. As indicated in specific Specifications Sections.

All drawings, schematics, manufacturer's product Data, certifications, and other Shop Drawing submittals required by a system specification shall be submitted at one time as a package to facilitate interface review.

- K. Only the Engineer shall utilize the color "red" in marking Shop Drawing submittals.
- L. Shop drawing and submittal data shall be reviewed by the Engineer for each original submittal and first resubmittal; thereafter review time for subsequent resubmittals shall be charged to the Contractor and the Contractor shall reimburse the Owner for services rendered by the Engineer as specified in the Supplementary Conditions.

1.04 SHOP DRAWINGS

- A. When used in the Contract Documents, the term "Shop Drawing" shall be considered to mean Contractor's plans for materials and equipment which become an integral part of the Project. Shop Drawings shall be complete and detailed and shall consist of fabrication, erection, setting and schedule drawings, manufacturer's scale drawings, and wiring and control diagrams. Catalogs cuts, catalogs, pamphlets, descriptive literature, and performance and test data shall be considered only as supportive information to required Shop Drawings as defined above. As used herein, the term "manufactured" applies to standard units usually mass-produced; and "fabricated" means items specifically assembled or made out of selected materials to meet individual design requirements.
- B. Manufacturer's catalog sheets, brochures, diagrams, illustrations, and other standard descriptive data shall be clearly marked to identify pertinent materials, products, or models. Delete information which is not applicable to the Work by striking or cross-hatching.
- C. Each Shop Drawing shall be submitted with an 8-1/2" by 11" cover sheet which shall include a title block for the submittal. Each Shop Drawing cover sheet shall have a blank area 3-1/2 inches high by 4-1/2 inches wide, located adjacent to the title block. The title block/cover sheet shall display the following:
 - 1. Project Title and Number.
 - 2. Name of project building or structure.
 - 3. Number and title of the Shop Drawing.
 - 4. Date of Shop Drawing or revision.

5. Name of Contractor and subcontractor submitting drawing.
 6. Supplier/manufacturer.
 7. Separate detailer when pertinent.
 8. Specification title and Section number.
 9. Applicable Drawing number.
- D. Data on materials and equipment shall include, without limitation, materials and equipment lists, catalog data sheets, catalog cuts, performance curves, diagrams, verification of conformance with applicable standards or codes, materials of construction, and similar descriptive material. Materials and equipment lists shall give, for each item thereon, the name and location of the supplier or manufacturer, trade name, catalog reference, size, finish, and all other pertinent Data.
- E. For all mechanical and electrical equipment furnished, the Contractor shall provide a list including the equipment name, and address, and telephone number of the manufacturer's representative and service company so that service and/or spare parts can be readily obtained.
- F. If drawings show variations from Contract requirements because of standard shop practice or for other reasons, the Contractor shall describe such variations in his letter of transmittal. If acceptable, proper adjustment in the Contract shall be implemented where appropriate. If the Contractor fails to describe such variations, he shall not be relieved of the responsibility for executing the Work in accordance with the Contract, even though such drawings have been reviewed.
- G. All manufacturers or equipment suppliers who propose to furnish equipment or products shall submit an installation list to the Engineer along with the required shop drawings. The installation list shall include at least five (5) installations where identical equipment has been installed and has been in operation for a period of at least two (2) years unless specified otherwise in the Specification Section applicable.

1.05 WORKING DRAWINGS

- A. When used in the Contract Documents, the term "Working Drawings" shall be considered to mean the Contractor's plan for temporary structures such as temporary bulkheads, support of open cut excavation, support of utilities, ground water control systems, forming and falsework for underpinning, and for such other

work as may be required for construction but does not become an integral part of the Project.

- B. Copies of working drawings as noted in paragraph 1.05 A. above, shall be submitted to the Engineer where required by the Contract Documents or requested by the Engineer, and shall be submitted at least thirty (30) calendar days (unless otherwise specified by the Engineer) in advance of their being required for the Work.
- C. Working Drawings shall be signed by a registered Professional Engineer, currently licensed to practice in the State of Florida, and shall convey, or be accompanied by, calculation or other sufficient information to completely explain the structure, machine, or system described and its intended manner of use. Prior to commencing such work, working drawings must have been reviewed without specific exceptions by the Engineer, which review will be for general conformance and will not relieve the Contractor in any way from his responsibility with regard to the fulfillment of the terms of the Contract. All risks to new or existing work are assumed by the Contractor; the Owner and Engineer shall have no responsibility therefor.

1.06 SAMPLES

- A. The Contractor shall furnish, for the approval of the Engineer, samples required by the Contract Documents or requested by the Engineer. Samples shall be delivered to the Engineer as specified or directed. The Contractor shall prepay all shipping charges on samples. Materials or equipment for which samples are required shall not be used in the Work until approved by the Engineer.
- B. Samples shall be of sufficient size and quantity to clearly illustrate:
 - 1. Functional characteristics of the product, with integrally related parts and attachment devices.
 - 2. Full range of color, texture, and pattern.
 - 3. A minimum of three (3) samples of each item shall be submitted.
- C. Each sample shall have a label indicating:
 - 1. Name of Project.
 - 2. Name of Contractor and subcontractor.
 - 3. Material or equipment represented.
 - 4. Place of origin.

5. Name of producer/supplier and brand (if any).
6. Location in Project.
7. Submittal and specification numbers.

(Samples of finished materials shall have additional marking that will identify them under the finished schedules.)

- D. The Contractor shall prepare a transmittal letter and a description sheet for each shipment of samples. The description sheet shall contain the information required in Paragraphs 1.06B and C above. He shall enclose a copy of the letter and description sheet with the shipment and send a copy of the letter and description sheet to the Engineer. Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any Contract requirements.
- E. Approved samples not destroyed in testing shall be sent to the Engineer or stored at the site of the Work. Approved Samples of the hardware in good condition will be marked for identification and may be used in the Work. Materials and equipment incorporated in the Work shall match the approved Samples. Samples which failed testing or were not approved will be returned to the Contractor at his expense, if so requested at time of submission.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01370

SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Submit to the Engineer an itemized Schedule of Values, corresponding to the bid items, which totals the bid amount for the Work, at the Pre-Construction Conference, and as otherwise specified or requested to be submitted earlier as evidence of the Apparent Low Bidder's qualifications.
2. Upon request of the Engineer support for the values will be provided with data which will substantiate their correctness. The data shall include, but not be limited to quantity of materials, all sub-elements of the activity, and their units of measure.
3. The combined Schedule of Values and the individual Schedule of Values for each site at which work is performed shall establish the actual value for each activity of the Work to be completed taken from the approved Critical Path Method (CPM) Construction Schedule, and shall be used as the basis for the Contractor's Applications for Payment.

B. Related Requirements Described Elsewhere:

1. Conditions of the Construction Contract.

1.02 FORM AND CONTENT OF SCHEDULE OF VALUES

A. Type schedule on 8-1/2 inch x 11 inch white paper. Contractor's standard forms and computer printouts may be considered for approval by the Engineer upon Contractor's request. Identify schedule with:

1. Title of project and location.
2. Owner and purchase order number.
3. Engineer and project number.
4. Name and address of Contractor.

5. Contract designation.
6. Date of submission.
- B. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing item prices for progress payments during construction.
- C. Identify each line item with the number and the title of the respective section of the Specifications.
- D. For each major item of the Work, list sub-values of major products or operations under the major item.
- E. For the various portions of the Work:
 1. The amount for each item shall reflect a total installed cost including a directly proportional amount of the Contractor's overhead and profit.
 2. For items on which progress payments will be requested for stored materials, break down the value into:
 - a. The cost of the materials, delivered and unloaded, with taxes paid. Paid invoices are required for materials. Payment for materials shall be limited to the invoiced amount only.
 - b. The total installed value.
- F. Round off figures to nearest dollar amount.
- G. The sum of the costs of all items listed in the schedule shall equal the total Contract Price.
- H. For each item which has an installed value of more than \$15,000, provide a breakdown of costs to list major products or operations under each item.

1.03 SUBSCHEDULE OF UNIT MATERIAL VALUES

- A. Submit a separate schedule of unit prices for materials to be stored on site and for those materials incorporated into the Work for which progress payments will be requested.
- B. Format shall be as acceptable to the City and Engineer.
- C. The unit values for the materials shall be broken down into:

1. Cost of the material, delivered and unloaded at the site, with taxes paid.
 2. Copies of paid invoices for component material shall be included with the payment request in which the material first appears.
- D. Only materials unique to the project may be billed when stored on site. Materials of standard use such as conduit, wire, small-diameter pipe, steel, etc., shall not be accepted for payment.
- E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

1.04 REVIEW AND RESUBMITTAL

- A. After review by Engineer, revise and resubmit Schedule of Values and Schedule of Unit Material Values as required.
- B. Resubmit revised schedules in same manner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01390

COLOR DVD PRE-CONSTRUCTION RECORD

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope of Work: Prior to commencing work, the Contractor shall have a continuous color DVD recording taken along the entire length of the Project and at all proposed construction sites within the Project area to serve as a record of pre-construction conditions.
- B. Contractor to lay out Project along with pipe alignment and station points prior to video.

1.02 QUALITY ASSURANCE

- A. The Contractor shall engage the services of a professional electrographer. The color DVD shall be prepared by a responsible commercial firm known to be skilled and regularly engaged in the business or preconstruction color DVD documentation.
- B. The electrographer shall furnish to the Engineer a list of all equipment to be used for the DVD, i.e., manufacturer's name, model number, specifications and other pertinent information.
- C. Additional information to be furnished by the electrographer are the names and addresses of two references that the electrographer has performed color DVD for, on projects of a similar nature, within the last 12 months.
- D. Owner's Representative must be present during filming. Provide Owner forty-eight (48) hours' notice prior to start of filming.
- E. No construction shall begin prior to review and approval of the DVD covering the construction area by the Owner and Engineer. The Engineer shall have the authority to reject all or any portion of a DVD not conforming to specifications and order that it be redone at no additional charge.
- F. The Contractor shall reschedule unacceptable coverage within five (5) days after being notified. The Engineer shall designate those areas, if any, to be omitted from or added to the DVD coverage.

- G. DVD shall not be made more than ninety (90) days prior to construction in any area. All DVDs and written records shall become property of Owner.

PART 2 - PRODUCTS

2.01 DVD

- A. DVD shall be new. Reprocessed DVDs will not be acceptable.

PART 3 - EXECUTION

3.01 EQUIPMENT

- A. All equipment, accessories, materials and labor to perform this service shall be furnished by the Contractor.
- B. The total audio-video system shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion, tearing, rolls or any other form of imperfection. The audio portion of the recording shall reproduce the commentary of the camera operator with proper volume, clarity and be free from distortion and interruptions.
- C. When conventional wheeled vehicles are used, the distance from the camera lens to the ground shall not be more than ten (10) feet. In some instances, DVD coverage may be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking or special conveyance provided by the Contractor.
- D. The color video camera used in the recording system shall have a horizontal resolution of 700 lines at center, minimum pixels 1,370 x 744, a luminance signal to noise ratio of 45 dB and a minimum illumination requirement of one (1) foot candle.

3.02 RECORDED INFORMATION - AUDIO

- A. Each DVD shall begin with the current date, project name and municipality and be followed by the general location, i.e., viewing side and direction of progress. The audio track shall consist of an original live recording. The recording shall contain the narrative commentary of the electrographer, recorded simultaneously with his fixed elevation video record of the zone of influence of construction.

- B. The Owner and Engineer reserve the right to supplement the audio portion of the DVD as deemed necessary. A representative of the Owner or Engineer shall be selected to provide such narrative.

3.03 RECORDED INFORMATION - VIDEO

- A. All video recordings shall, by electronic means, display on the screen the time of day, the month, day and year of the recording. This time and date information must be continuously and simultaneously generated with the actual recording.
- B. Each DVD shall have a log of that DVD's contents. The log shall describe the various segments of coverage contained on that DVD in terms of the names of streets or easements, coverage beginning and end, directions of coverage, video unit counter numbers, engineering stationing numbers and the date.

3.04 LIGHTING

- A. All video shall be done during time of good visibility. No recording shall be done during precipitation, mist or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording and to produce bright, sharp video recordings of those subjects.

3.05 SPEED OF TRAVEL

- A. The rate of speed in the general direction of travel of the vehicle used during recording shall not exceed 44 feet per minute. Panning, zoom-in and zoom-out rates shall be sufficiently controlled to maintain a clear view of the object.

3.06 AREA OF COVERAGE

- A. Video coverage shall include all surface features located within the zone of influence of construction supported by appropriate audio coverage. Such coverage shall include, but not be limited to, existing driveways, sidewalks, curbs, pavements, ditches, mailboxes, landscaping, culverts, fences, signs, and headwalls within the area covered, all the way to the right-of-way line and include station points and addresses.

END OF SECTION

SECTION 01400

TESTING AND INSPECTION

PART 1 – GENERAL

- A. All testing and inspection will be in accordance with the General Conditions.
- B. The work or actions of the testing laboratory shall in no way relieve the Contractor of his obligations under the Contract. The laboratory testing work will include such inspections and testing required by the Contract Document, existing laws, codes, ordinances, etc. The testing laboratory will have no authority to change the requirements of the Contract Documents, nor perform or approve any of the Contractor's work.
- C. The Contractor shall allow the Engineer ample time and opportunity for testing materials and equipment to be used in the work. He shall advise the Engineer promptly upon placing orders for materials and equipment so that arrangements may be made, if desired, for inspection before shipment from the place of manufacture. The Contractor shall at all times furnish the Engineer and his representatives, facilities including labor, and allow proper time for inspecting and testing materials, equipment, and workmanship. The Contractor must anticipate that possible delays may be caused him in the execution of his work due to the necessity of materials and equipment being inspected and accepted for use. The Contractor shall furnish, at his own expense, all samples of materials required by the Engineer for testing, and shall make his own arrangement for providing water, electric power, or fuel for the various inspections and tests of structures and equipment. As a minimum, 24-hours advance written notice shall be provided by the Contractor for rebar, structural and similar inspections by the Engineer. The amount of time required for advance written notice by the Contractor to the Engineer for other inspections depends upon other factors and shall be solely at the Engineer's discretion.
- D. The Contractor shall furnish the services of representatives of the manufacturers of certain equipment, as prescribed in other sections of the Specifications. The Contractor shall also place his orders for such equipment on the basis that, after the equipment has been tested prior to final acceptance of the work, the manufacturer will furnish to the City the certified statements that the equipment has been installed properly and is ready to be placed in functional operation. Tests and analyses required of equipment shall be paid for by the Contractor, unless specified otherwise in the section which covers a particular piece of equipment.
- E. The Contractor will bear the cost of all additional tests, inspections, or investigations undertaken by the order of the Engineer for the purpose of determining conformance with the Contract Documents if such test, inspection, or investigations are not specifically required by the Contract Documents, and if conformance is ascertained thereby. Whenever nonconformance is determined by the Engineer as a result of such test, inspections, or investigations, the Contractor shall bear the full cost thereof or shall reimburse the City for said cost. The cost of any additional tests and investigations,

which are ordered by the Engineer to ascertain subsequent conformance with the Contract Documents, shall be borne by the Contractor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01500

CONSTRUCTION CONSIDERATIONS

PART 1 - GENERAL

1.01 HYDRAULIC UPLIFT ON STRUCTURES

- A. The Contractor shall be completely responsible for any structures, stormwater conflicting structure, tanks, wet wells, pipelines, manholes, foundations, cellars, or similar structures that may become buoyant during the construction operations due to the ground water, floods or buoyancy of piping caused due to the placement of flowable backfills before the structure is put into operation. Should there be any possibility of buoyancy of a pipeline or structure, the Contractor shall take the necessary steps to prevent its buoyancy. Damage to any structures due to floating or flooding shall be repaired or the structures replaced at the Contractor's expense.

1.02 WATER TIGHTNESS OF STRUCTURES

- A. General: It is the intent of these specifications that all concrete work, sealing work around built-in items and penetrations be performed as required to ensure that groundwater, rainwater, wastewater, chemical solutions or other process liquids in tanks, wetwells, channels, and containers will not leak into any buildings and/or equipment rooms, pipe galleries, habitable areas, or other generally dry areas.
 - 1. The required watertightness shall be achieved by quality concrete construction and proper sealing of all joints and penetrations.
 - 2. Each unit shall be tested separately, and the leakage tests shall be made prior to backfilling and before equipment is installed unless otherwise approved by the Engineer. Only potable water shall be used for the tests.
 - 3. The watertightness of buildings exclusive of the portions designed to contain liquids will consist of checking for leaks due to rain or groundwater infiltration.
 - 4. The Contractor shall provide at his own expense all labor, material, temporary bulkheads, pumps, water, measuring devices, etc., necessary to perform the required test.
- B. Built-in Items and Penetrations: All pipe sleeves, built-in items and penetrations shall be sealed as detailed and as required to ensure a continuous watertight seal.

1.03 CUTTING AND PATCHING

- A. The Contractor shall perform all cutting and patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by such other work. The Contractor shall not endanger any work of others by cutting, excavating or otherwise altering their work and shall only alter work with the written consent of the Engineer and of the other contractors whose work will be affected.

1.04 ABANDONMENT AND SALVAGE OF EXISTING FACILITIES

- A. General: The scope of work requires the Contractor to interface with existing structures, and piping which will be abandoned or otherwise removed and/or relocated as part of the work. Prior to beginning any work associated with existing facilities to be abandoned, salvaged, or otherwise removed or relocated, the Contractor shall inform the City and the Engineer of his intent so that all arrangements can be made with the City for isolating pipelines (where possible) or otherwise removing existing facilities from service to the extent possible. The Contractor shall not proceed without written authorization from the City. **The Contractor shall contact and coordinate accordingly with utilities companies prior to and during the execution of the relocation, removal or abandonment of existing utilities structures. Existing utilities coordination is exclusively the responsibility of the Contractor and at their cost.**
- B. Pipelines: The Contractor shall properly abandon, salvage or otherwise remove existing pipelines or segments of existing pipelines shown to be abandoned in place, salvaged, or removed as part of the contract work. Unless otherwise indicated in the Contract Documents, all piping shown on the Drawings to be abandoned shall be abandoned in place. Pipe shown to be abandoned need only be removed a minimum three feet clear of new utilities to be installed. Abandon-in-place shall be defined as installing plugs, or other permanent closure, as reviewed and accepted by the City, on all termination's, open ends or ends of pipe designated as being cut, capped and anchored in an acceptable manner. The pipe will remain buried unless otherwise noted. All piping 6-inches in diameter and larger shall be grout filled when abandoned in place. See Sections 02080 and 03600 for additional requirements.
- C. Piping indicated on the Drawings as being removed, or any piping to be abandoned which interferes with new structures or piping, shall be excavated and removed using methods which will not disturb adjacent piping or other facilities. All pipe materials shall be subject to salvage by the City as defined herein. Any remaining piping on both ends of pipe segments removed shall be abandoned in-place, per the above definition. After piping has been removed, the Contractor shall backfill the evacuated area in accordance with requirements set forth in other sections of these specifications.

- D. Equipment: The Contractor shall abandon, salvage or otherwise remove existing equipment or other facilities as shown on the Contract Drawings or indicated herein. In all cases, the Contractor shall exercise caution when handling the existing equipment so as not to disturb or damage adjacent facilities. The Contractor shall make all repairs to adjacent facilities which may be damaged as a result of the Contractor's efforts in abandoning, salvaging or otherwise removing existing facilities, at no additional cost to the City.
- E. Salvage: The City may desire to salvage certain items of existing equipment which are to be dismantled and removed during the course of construction. Prior to removal of any existing equipment or piping from the site of work, the Contractor shall ascertain from the City whether or not the particular item or items are to be salvaged. Items to be salvaged shall be either stockpiled on the site, in a location as designated by the City, or delivered by the Contractor to the City's designated facility. All other items of equipment shall be disposed of off-site by the Contractor at his own expense, in accordance with applicable laws, ordinances and regulations.

1.05 DIMENSIONS OF EXISTING STRUCTURES

- A. Where the dimensions and locations of existing structures are of critical importance in the installation or connection of new work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any materials or equipment which is dependent on the correctness of such information.

1.06 REHABILITATION

- A. Certain areas of existing structures, piping, conduits, and the like will be affected by work necessary to complete modifications under this Contract. The Contractor shall be responsible to rehabilitate those areas affected by its construction activities.
- B. Disposal of Debris: All debris, materials, piping, and miscellaneous waste products from the work described in this section shall be removed from the project as soon as possible. They shall be disposed of in accordance with applicable federal, state, and local regulations. The Contractor is responsible for determining these regulations and shall bear all costs or retain any profit associated with disposal of these items.

1.07 OBSTRUCTIONS

- A. All water pipes, storm drains, sanitary sewers, force mains, gas or other pipe, telephone or power cables or conduits and all other obstructions, whether or not shown, shall be temporarily supported across utility line excavations. The Contractor shall be responsible for any damage to any such pipes, conduits, or structures. Approximate locations of known water, sanitary, drainage, power and telephone installations along route of new pipelines or in the vicinity of new work

are shown, but must be verified in the field by the Contractor. The Contractor shall uncover these pipes, ducts, cables, etc., carefully, by hand, prior to installing new lines. Any discrepancies or differences found shall be brought to the attention of the Engineer in order that necessary changes may be made to permit installation of new work. These conditions are supplemental to general requirements elsewhere in the Contract Documents.

1.08 SITE CONDITIONS

- A. The Contractor acknowledges that he has investigated prior to bidding and satisfied himself as to the conditions affecting the Work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, canal stages, tides, water tables or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the Work. The Contractor further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, or any contiguous site, as well as from information presented by the Drawings and Specifications made a part of this Contract, or any other information made available to him prior to receipt of Bids. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work. The City assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the City.

1.09 CONSTRUCTION DEWATERING AND NOISE

- B. All dewatering equipment such as pumps, air compressors, generators, etc. proposed for use during construction in residential areas shall be provided with noise enclosures suitable to meet the requirements of the City of North Miami Noise Ordinance and/or Miami-Dade County Noise Ordinance, whichever is more stringent.
- C. Dewatering shall be done in accordance with Section 02140 - Dewatering.

1.10 SUBSURFACE INVESTIGATIONS

- A. The Contractor shall be responsible for having determined to his satisfaction, prior to the submission of his bid, the nature and location of the work, the conformation of the ground, the character and quality of the substrata, the types and quantity of materials to be encountered, the nature of the groundwater condition, the character of equipment and facilities required preliminary to and during the performance of the work, the general and local conditions and all other matters which can in any way affect the work under this Contract. The prices

established for the work to be done shall reflect all costs pertaining to the work. Any claims for extras based on the substrata or ground water table conditions will be disallowed.

- B. The Contractor further acknowledges that he assumes all risk contingent upon the nature of the subsurface conditions actually encountered by him in performing the work covered by the Contract, even though such actual conditions may result in the Contractor performing more or less work than he originally anticipated.
- C. Existing utilities shall be protected in accordance with Section 01530 - Protection of Existing Facilities.

1.11 DIFFERING SITE CONDITIONS

- A. The Contractor shall promptly and before such conditions are disturbed, notify the City in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for this contract. The City will promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the Contractor cost of, or the time required for, performance of any part of the work under this contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the contract modified in writing accordingly. Lack of notification in advance of construction efforts will be at the risk of the Contractor and any and all relative delay claims subsequently denied.

1.12 PROTECTION OF PROPERTY

- A. The Contractor shall protect all property that may be affected by his work or operations in accordance with Section 01530 - Protection of Existing Facilities. The location and extent of underground and covered facilities are not guaranteed.
- B. The Contractor is cautioned to proceed with care in order to prevent the undermining or damage to existing utilities including piping, power cable, utility poles, conduit, duct banks, fiber optic cable, gas, telephone and cable TV services, structures, piping, and any other facilities within the work limits.
- C. The Contractor shall take all measures necessary to protect new and existing mechanical equipment from dust and debris. All protective measures shall be furnished, installed, lighted, ventilated, maintained, and removed at the Contractor's own cost.
- D. When City water is being used, the supply source shall be protected against contamination in accordance with existing codes and regulations.
- E. In the event any of the Contractor's activities were to disrupt or endanger any facilities, he shall at his own expense make all necessary repairs or replacements

necessary to correct the situation to the satisfaction of the Engineer. Such work shall progress continuously to completion on a 24-hour per day, seven workday basis. The Contractor shall be responsible for the services of repair crews on call 24 hours per day for emergencies that arise involving work under this Contract.

1.13 WEATHER CONDITIONS

- A. Work that may be affected by inclement weather shall be suspended until proper conditions prevail. In the event of impending storms the Contractor shall take necessary precautions to protect all work, materials and equipment from exposure. The City reserves the right, through the opinion of the Engineer, to order that additional protection measures over and beyond those proposed by the Contractor, be taken to safeguard all components of the project. The Contractor shall not claim any compensation for such precautionary measures so ordered, nor claim any compensation from the City for damage to the work from the elements of weather.

1.14 FIRE PROTECTION

- A. The Contractor shall take all necessary precautions to prevent fires at or adjacent to the work, including his own buildings and trailers. Adequate fire extinguisher and hose line stations shall be provided throughout the work area.

1.15 SAFETY AND HEALTH REQUIREMENTS

- A. The Contractor shall comply in every respect with all Federal, State and local safety and health regulations. Copies of the Federal Regulations may be obtained from the U.S. City of Labor, Occupational Safety and Health Administration.
- B. The Contractor shall provide all barricades and flashing warning lights or other traffic and warning devices necessary to warn pedestrians and area traffic. See Section 01570 – Traffic Regulations and Maintenance of Traffic.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01510
TEMPORARY UTILITIES

PART 1 – GENERAL

1.01 GENERAL REQUIREMENT

- A. The Contractor shall provide for utilities and services for its own operations. The Contractor shall furnish, install and maintain all temporary utilities during the contract period including removal upon completion of the work.

1.02 JOB CONDITIONS

- A. Scheduled Uses: The Contractor shall, in conjunction with establishment of job progress schedule, establish a schedule for implementation and termination of service for each temporary utility or facility; at earliest feasible time, and, when acceptable to City, change over from use of temporary utility service to permanent service.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. The Contractor shall provide either new or used materials and equipment, which are in substantially undamaged condition and without significant deterioration and which are recognized in the construction industry, by compliance with appropriate standards, as being suitable for intended use in each case. Where a portion of temporary utility is provided for Contractor by utility company, the Contractor shall provide remainder with matching and compatible materials and equipment and comply with recommendations of utility company.

PART 3 – EXECUTION

3.01 INSTALLATION OF TEMPORARY UTILITY SERVICES

- A. General: Wherever feasible, the Contractor shall engage the utility company to install temporary service to project, or as a minimum, to make connection to existing utility service; locate services where they will not interfere with total project construction work, including installation of permanent utility services; and maintain temporary services as installed for required period of use; and relocate, modify or extend as necessary from time to time during that period as required to accommodate total project construction work.

- B. Approval of Electrical Connections: All temporary connections for electrician shall be subject to approval of the City and the power company representative, and shall be removed in like manner at the Contractor's expense prior to final acceptance of the work.
- C. Separation of Circuits: Unless otherwise permitted by the City, circuits separate from lighting circuits shall be used for all power purposes.
- D. Construction Wiring: All wiring for temporary electric light and power shall be properly installed and maintained and shall be securely fastened in place. All electrical facilities shall conform to the requirements of Subpart K of the OSHA Safety and Health Standards for Construction.

3.02 INSTALLATION OF POWER DISTRIBUTION SYSTEM

- A. Power: The Contractor shall provide all necessary power required for its operations under the Contract, and shall provide and maintain all temporary power lines required to perform the work in a safe and satisfactory manner.
- B. Temporary Power Distribution: The Contractor shall provide a weatherproof, grounded, temporary power distribution system sufficient to accommodate performance of entire work of project, including, but not necessarily limited to, temporary electrical heating where indicated, operation of test equipment and test operation of building equipment and systems which cannot be delayed until permanent power connections are operable, temporary operation of other temporary facilities, including permanent equipment and systems which must be placed in operation prior to use of permanent power connections (pumps, HVAC equipment, elevators, and similar equipment), and power for temporary operation of existing facilities (if any) at the site during change-over to new permanent power system. Provide circuits of adequate size and proper power characteristics for each use; run circuit wiring generally overhead, and rise vertically in locations where it will be least exposed to possible damage from construction operations, and result in least interference with performance of the work; provide rigid steel conduit or equivalent raceways for wiring which must be exposed on grade, floors, decks, or other recognized exposures to damage or abuse.

3.03 INSTALLATION OF LIGHTING

- A. Construction Lighting: All work conducted at night or under conditions of deficient daylight shall be suitably lighted to insure proper work and to afford adequate facilities for inspection and safe working conditions.
- B. Temporary Lighting: The Contractor shall provide a general, weatherproof, grounded temporary lighting system in every area of

construction work, and provide sufficient illumination for safe work and traffic conditions; and run circuit wiring generally overhead, and rise vertically in locations where it will be least exposed to possible damage from construction operations on grade, or other recognized areas of possible damage or abuse.

3.04 WATER SUPPLY

- A. The Contractor shall provide all facilities necessary to convey the water from the source to the points of use in accordance with the requirements of the Contract Documents. The Contractor shall pay the fee for water meter and all other charges for water use.
- B. The Contractor shall provide and operate all pumping facilities, pipelines, valves, hydrants, storage tanks, and all other equipment necessary for the adequate development and operation of the water supply system. Water used for domestic purposes shall be free of contamination and shall conform to the requirements of the State and local authorities for potable water. The Contractor shall be solely responsible for the adequate functioning of its water supply system and shall be solely liable for any claims arising from the use of same, including discharge or waste of water there from.
- C. Water Connections: The Contractor shall not make connection to, or draw water from, any fire hydrant or pipeline without first obtaining permission of the authority having jurisdiction over the use of said fire hydrant or pipeline and from the agency owning the affected water system. For each such connection made, the Contractor shall first attach to the fire hydrant or pipeline a valve and a meter, if required by the said authority, of a size and type acceptable to said authority and agency. The Contractor shall pay all permit and water charges.

3.05 INSTALLATION OF SANITARY FACILITIES

- A. Toilet Facilities: Fixed or portable chemical toilets shall be provided wherever needed for the use of Contractor's employees. Toilets at construction job sites shall conform to the requirements of Subpart D, Section 1926.51 of the OSHA Standards for Construction.
- B. Sanitary and Other Organic Wastes: The Contractor shall establish a regular daily collection of all sanitary and organic wastes. All wastes and refuse from sanitary facilities provided by the Contractor or organic material wastes from any other source related to the Contractor's operations shall be disposed of away from the site in a manner satisfactory to the City and in accordance with all laws and regulations pertaining thereto.

- C. Sewer Connection: The Contractor shall coordinate with the City for obtaining sewer connection and shall pay all sewer usage charges.

3.06 INSTALLATION OF FIRE PROTECTION

- A. Fire Protection: The construction plant and all other parts of the work shall be connected with the Contractor's water supply system and shall be adequately protected against damage by fire. Hose connections and hose, water casks, chemical equipment, or other sufficient means shall be provided for fighting fires in the temporary structures and other portions of the work, and responsible persons shall be designated and instructed in the operation of such fire apparatus so as to prevent or minimize the hazard of fire.

3.07 OPERATIONS AND TERMINATIONS

- A. Inspections: Prior to placing temporary utility services into use, the Contractor shall inspect and test each service and arrange for governing authorities' required inspection and tests, and obtain required certifications and permits for use thereof.
- B. Protection: The Contractor shall maintain distinct markers for underground lines, and protect from damage during excavating operations.
- C. Termination and Removal: When need for a temporary utility service or a substantial portion thereof has ended, or when its service has been replaced by use of permanent services, or not later than time of substantial completion, the Contractor shall promptly remove installation unless requested by City to retain it for a longer period. The Contractor shall complete and restore work which may have been delayed or affected by installation and use of temporary utility, including repairs to construction and grades and restoration and cleaning of exposed surfaces.
- D. Removal of Water Connections: Before final acceptance of the work on the project, all temporary connections and piping installed by the Contractor shall be entirely removed, and all affected improvements shall be restored to their original condition, or better, to the satisfaction of the City and to the agency owning the affected utility.

END OF SECTION

SECTION 01520

MAINTENANCE OF FACILITIES AND SEQUENCE OF CONSTRUCTION

PART 1 - GENERAL

1.01 GENERAL

The Contractor shall ensure the continuous operation of all existing sanitary sewer systems, potable water systems, and stormwater facilities during construction. In addition, the Contractor shall provide temporary traffic routing and coordinate his work so as to minimize impact to the utilities systems located in the area. In performing the work shown and specified, the Contractor shall plan and schedule his work as outlined in this Section.

1.02 CONSTRUCTION SCHEDULE

The Construction Schedule shall be submitted by the Contractor in accordance with Section 01340 of these Specifications.

1.03 USE OF FACILITIES BEFORE COMPLETION

The City reserves the right to enter and use any portion of the constructed facilities before final completion of the whole work to be done under this Contract.

1.04 CONNECTION OF EXISTING SYSTEMS

All connections to existing systems shall be performed in such a manner that no damage and no interruptions are caused to the existing system. Partial clearances may be required of the Contractor for City use of a portion of the system. On completion of its installation, the Contractor shall complete the connections to the existing systems in a proper manner. Any damage caused to existing installations shall be repaired or replaced by the responsible Contractor at no additional cost to the City.

1.05 COORDINATION WITH CITY PERSONNEL

- A. Before commencing work involving removing or placing in operation existing or new facilities or tie-ins to existing facilities, the Contractor shall notify the City at least three (3) business days in advance in writing. The City shall be responsible for removing facilities from operation as deemed necessary.
- B. The Contractor shall, under no circumstances, interfere with the existing potable water, sewer, stormwater and other facilities without the City's or other jurisdictional authorities' authorizations, in writing, and supervision. The Contractor shall notify the City's representative in writing a minimum of three (3) work days prior to each scheduled service request. This notification shall be provided on the

City's standard form, or on an approved equivalent form completed in full by the Contractor.

1.06 COORDINATION WITH PRIVATE PROPERTY OWNERS

Prior to commencing any construction, the Contractor shall distribute notifications to all affected parties within the work limits and shall obtain permission from all affected parties prior to commencement of construction. All notifications must be reviewed and approved by the City prior to distribution. Notifications, including flyers, signage, VMS boards and all other forms of notifications are to be provided by the Contractor at their cost and prior to commencement of construction.

1.07 GENERAL SEQUENCE OF CONSTRUCTION AND OPERATION REQUIREMENTS

- A. Work under the Contract shall be scheduled and performed in such a manner as to result in the least possible disruption to the public's use of roadways, driveways, parking areas, and utilities. Utilities shall include but not be limited to water, sewerage, irrigation, drainage structures, gas, electrical service, cable TV services, fiber optic cables, and telephone. Prior to commencing with the work, Contractor shall perform a location investigation of all existing underground and above ground utilities and facilities in accordance with Section 01530 - Protection of Existing Facilities. Utilities that present potential conflict with the proposed piping shall be field verified with soft digging at the Contractor's expense and prior to commencement of construction. Potential conflicts not identified in advance of construction or via working ahead of construction (200-feet ahead with soft digs and field verifications) to locate upcoming conflicts within the work zone will not be justifiable for change orders or delay claims by the Contractor.
- B. The outlined sequence of construction does not include all items necessary to complete the work, but is intended to identify the sequence of critical events necessary to minimize any disruptions and to avoid any impact to continued collection system service. It shall be understood by the Contractor that the critical events identified are not all inclusive and that additional items of work not shown may be required. The sequence of construction is a precedence requirement and does not attempt to schedule the Contractor's work. It is intended only to indicate which activities must precede other activities in order to minimize interferences and disruptions.
- C. All work by the Contractor that disrupts the normal utilities operations shall be shown on the Construction Schedule specified in Section 01340 and specifically scheduled with the City. Schedule notification shall consist of a written notice defining the work to be accomplished, the potential duration of the interruption, and the mitigating effort to be performed by the Contractor. The written notice shall be submitted to the City fourteen days in advance of the proposed work and the City will respond to the Contractor in writing within seven days of receipt of the notice regarding the acceptability of the proposed plan.
- D. At no time, will the Contractor be allowed to close off any pipelines, or open any valves, or take any other action which would affect the operation of the existing

system, except as specifically required by the drawings and specifications, and until authorization is granted by the City or Engineer and after proper notification has been provided.

- E. Temporary installations required to complete a particular aspect of the work during the allowed time period shall be determined by the Contractor and implemented by the Contractor at no additional cost to the City. All such temporary installations shall be subject to review and acceptance.
- F. Sequence of certain major events and identification of time constraints for removing existing facilities from active service and installation of new facilities are described below in paragraph 1.08. No phase of work (or tasks within a phase) shall preclude or be performed in parallel with a subsequent phase unless specifically defined so in these documents. In all cases, work in each phase shall be checked out and accepted for satisfactory use, subject to the Engineer's approval, prior to the Contractor proceeding to the next phase of construction.

1.08 DETAILED SEQUENCE OF CONSTRUCTION AND OPERATION REQUIREMENTS

- A. Phasing of the work shall be determined by the Contractor prior to commencement of construction. The Contractor is to coordinate with the City prior to developing their construction schedule accordingly and to obtain their approval.
- B. Phase I - Mobilization / Site Preparation: Mobilize for work – Video working areas, set up staging and storage areas, obtain permits, develop and submit construction schedule, submit shop drawing schedule, survey, locate existing utilities and elevations with soft digging, verify existing fittings to be connected, shop drawing submittals, and procure materials.
- C. Phase II – Construction of the Water and/or Sewer Systems: The tasks included under this phase consist of installation of proposed improvements as described in the approved construction plans.
- D. Phase III - Final Sitework and Closeout: Final pavement and asphalt overlay of the affected road sections, final restoration, final grading, sodding, miscellaneous work, demobilization and related closeout activities as described in Section 01700 - Project Closeout.
- E. Construction Constraints: Contractor shall comply with the following constraints during construction and utilize constraints in determining a sequence of construction:
 - 1. Construction work during the installation of the proposed work shall be limited to the public right-of-ways. Residents and businesses, etc., shall have access to their driveways at all times.
 - 2. The excavation area shall be surrounded with barricades and obstructions illuminated with temporary lighting furnished, installed and maintained by the Contractor.

3. Final restoration of roads, driveways, sidewalks and all other paved areas shall be completed within a timely fashion.
4. Contractor is expected to work regular hours between the hours of 7:00 AM and 4:00 PM, Monday through Friday or as allowed by permit conditions. Requests for approval to work during other than regular hours must be submitted to the Engineer at least 72 hours in advance of the period proposed for such overtime work and shall set forth the proposed schedule for overtime work to give Engineer ample time to arrange for his personnel to be at the site of the Work, even for work required to occur by contract. Contractor shall pay for additional charges for inspections of the overtime or after hours, night and weekend work. Such additional charges shall be a subsidiary obligation of Contractor, and no extra payment shall be made by City on account of such overtime or after hours, night or weekend work. The Contractor shall not violate the local jurisdiction's Noise Ordinance.
5. Work hours as required by other jurisdictional authorities or by permit conditions must be followed at all times. The Contractor shall notify the authority if any deviations to the standard work hours are anticipated.
6. The Contractor shall pay liquidated damages of \$500/DAY for not complying with any one of the above requirements.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 COORDINATION WITH EXISTING UTILITIES AND OTHER AGENCIES

- A. The Contractor shall coordinate with Sunshine One-Call Notification at 811 minimum of 48 business hours prior to any excavation for location of existing underground facilities. Permit requirements for notifications to all jurisdictional agencies within the work limits must be adhered to by the Contractor.

3.02 COOPERATION

The Contractor shall allow the City or its agents, and other project contractors or their agents, to enter facilities being constructed under this Contract for the purpose of constructing, installing, operating, maintaining, removing, repairing, inspecting, reviewing, altering or replacing such equipment pipes, sewers, conduits, manholes, wires, or other structures which may be required to be installed at or in the work area. The Contractor shall cooperate with all the aforesaid parties and shall allow reasonable provisions for the execution of any other work by the City, or others, to be done in connection with his work, or in connection with normal use of the facilities.

END OF SECTION

SECTION 01530

PROTECTION OF EXISTING FACILITIES

PART 1 - GENERAL

1.01 THE REQUIREMENT

- A. The Contractor shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents.
- B. The Contractor shall verify the exact locations and depths of all utilities shown and the Contractor shall make exploratory excavations of all utilities that may interfere with the work. All such exploratory excavations shall be performed as soon as practicable after award of Contract and, in any event, a sufficient time and at least 200 feet in advance of the construction work area to avoid possible delays to the Contractor's Work. When such exploratory excavations show the utility location as shown to be in error, the Contractor shall so notify the City and Engineer immediately. No delay claims or change orders will be allowed for the Contractor's lack of working ahead to identify conflict potential upcoming within the work limits.
- C. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility and shall be at no additional cost to the City.

1.02 RESTORATION OF ROADWAYS

- A. General: All paved areas cut or damaged during construction shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas and grades. All temporary and permanent pavement shall conform to the requirements of the affected pavement. All pavements which are subject to partial removal shall be neatly saw cut in straight lines. The Contractor will be required, as a minimum, to match existing pavement thicknesses, base material type and thicknesses, and provide any necessary improvements per jurisdictional requirements. The Contractor is required to perform pavement corings prior to commencement of construction in order to evaluate the existing pavement and base material as well as to identify groundwater conditions such that pavement restoration includes matching existing pavement thicknesses, base materials and thicknesses and obtaining jurisdictional approvals for all pavement restoration prior to commencement of construction or restoration efforts along project roadways.
- B. Temporary Restoration: Temporary restoration includes repair to all driveways, sidewalks and roadways. They shall be swept clean and be maintained free of dirt and dust. All areas disturbed by the construction activities shall be restored to proper grade,

cleaned up, including the removal of debris, trash, and deleterious materials. All construction materials, supplies, or equipment, including piles of debris shall be removed from the area. All temporarily restored areas shall be maintained by the Contractor. These areas shall be kept clean and neat, free of dust and dirt, until final restoration operations are completed. The Contractor is responsible to utilize dust abatement operations in the temporarily restored areas as required, to the satisfaction of the Engineer. All jurisdictional requirements, standards and specifications are to be followed.

- C. Temporary Resurfacing: Wherever required by the public authorities having jurisdiction, the Contractor shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration and improvements.
- E. Permanent Resurfacing: In order to obtain a satisfactory junction with adjacent surfaces, the Contractor shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement at all times.
- F. Final Restoration: Final restoration shall include the completion of all required pavement replacement of roadways, driveways, curbs, gutters, sidewalks and other existing improvements disturbed by the construction: final grading, placement of sod, installation or replacement of any trees or shrubs, repair of irrigation systems, pavement markings, etc., all complete and finished, acceptable to the Engineer and the City.

1.03 EXISTING UTILITIES AND IMPROVEMENTS

- A. General: The Contractor shall protect all underground utilities and other improvements which may be impaired during construction operations. It shall be the Contractor's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations, and to see that such utilities or other improvements are adequately protected from damage due to such operations.
- B. Where the proper completion of the Work requires the temporary or permanent removal and / or relocation of an existing utility or other improvement, the Contractor shall remove and temporarily replace or relocate such utility or improvement in a manner satisfactory to the City and the Owner of the utility/facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the Contractor in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal and at the Contractor's cost.

- D. City's Right of Access: The right is reserved to the City and to the Owners of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the work of this Contract.
- E. Underground Utilities Shown or Indicated: Existing utility lines, and all utility lines that are constructed during excavation operations shall be supported and protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired by the Contractor at their cost.
- F. Underground Utilities Not Shown or Indicated: In the event that the Contractor damages any existing utility lines that are identified in the field or the locations of which are not made known to the Contractor prior to excavation by the City and Sunshine One-Call Notification, a written report thereof shall be made immediately to the City. The Contractor shall make the repairs immediately and at their cost. In addition, the Contractor shall perform soft digs or other due diligence necessary to field verify existing utilities and potential conflicts, while working ahead of the construction at least 200-feet, such that potential conflicts can be identified. No delay claims or change orders will be allowed when the Contractor's has not worked ahead of the current construction work area and performed necessary due diligence to keep the construction effort moving forward.
- G. Approval of Repairs: All repairs to a damaged improvement are subject to inspection and approval by an authorized representative of the City before being concealed by backfill or other Work.
- H. Maintaining in Service: All oil and gasoline pipelines, power, and telephone or other communication cable ducts, gas and water mains, irrigation lines, reuse lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables as well as other active utilities encountered along the line of the Work shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the City are made with the owner of said utilities. The Contractor shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

1.04 TREES WITHIN STREET RIGHTS-OF-WAY AND PROJECT LIMITS

Trees are to be protected at all times. If any tree removal, trimming or relocation is required, the Contractor needs to coordinate with the City, accordingly. Trees that are removed are required to be replaced at the Contractor's expense and in kind to the greatest extent possible. All required permits related to tree removal are the responsibility of the Contractor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01570

TRAFFIC REGULATIONS AND MAINTENANCE OF TRAFFIC

PART 1 - GENERAL

1.01 TRAFFIC CONTROL

- A. Contractor shall obey all traffic laws and comply with all the requirements, rules and regulations of the State of Florida Department of Transportation (FDOT), the City of North Miami, Miami-Dade County and other local authorities having jurisdiction, to maintain adequate warning signs, lights, barriers, flagmen, police, etc., for the protection of vehicular traffic and pedestrian traffic on public roadways and within the project corridor.
- B. The Contractor shall maintain traffic and protect the public from all damage to persons and property within the Contract Limits, in accordance with the Contract Documents and all applicable state, city and local regulations. The Contractor shall conduct its construction operations so as to maintain and protect access, for vehicular and pedestrian traffic, to and from all properties and business establishments adjoining or adjacent to those streets affected by his operations, and to subject the public to a minimum of delay and inconvenience. Suitable signs, barricades, barrier walls, police, etc. shall be erected and in place and the work outlined by adequate lighting at night. Danger lights shall be provided as required. Watchmen, flagmen, and crossing guards shall be provided as may be necessary for the protection of traffic. Traffic Control and Maintenance of traffic during construction shall be included in the Contractor's bid and no additional payment shall be requested to the City for these activities
- C. For the protection of vehicular and pedestrian traffic in public or private streets and alleyways, the Contractor shall provide, place, and maintain all necessary barricades, traffic cones, warning signs, lights, and other safety devices in accordance with the requirements of the "Manual of Uniform Traffic Control Devices (MUTCD), published by U.S. City of Transportation, Federal Highway Administration (ANSI D6.1).
- D. The Contractor shall submit a Maintenance of Traffic (MOT) Plan for approval at least 30 days prior to construction work. The plan shall be signed and sealed by a registered PE in the state of Florida and be approved by all jurisdictional agencies having authority over the right-of-way limits.
- E. Prior to performing any work within or abutting the State rights-of-way, the Contractor shall submit a detailed Maintenance of Traffic (MOT) Plan to Florida Department of Transportation (FDOT) for approval as required by the FDOT Utility Permit. The plan shall be signed and sealed by a registered PE in the state of Florida. All MOT plans and permitting efforts are at the Contractor's cost.

- F. All signs, signals, and barricades shall conform to the requirements of FDOT.
- G. All dirt spilled from the Contractor's trucks on existing pavements shall be removed by the Contractor immediately and whenever in the opinion of the City the accumulation is sufficient to cause the formation of mud, dust, interference with traffic or create a traffic hazard.
- H. Areas designated by the Miami-Dade County Traffic Engineering Division as "Safe Walk Routes" shall adhere to the requirements of the Miami-Dade County Maintenance of Traffic School/Pedestrian.

1.02 TEMPORARY CROSSINGS

- A. General: Wherever necessary or required for the convenience of the public or individual residents at street or highway crossings, private driveways, or elsewhere, the Contractor shall provide suitable temporary bridges or stabilized paths over unfilled excavations for which written consent shall be delivered to the City prior to excavation. All such bridges shall be maintained in service until access is provided across the backfilled excavation. Temporary bridges or stabilized paths for street and highway crossing shall conform to the requirements of the authority having jurisdiction in each case, and the Contractor shall adopt designs furnished by said authority for such, or shall submit designs to said authority for approval, as may be required.
- B. Street Use: Nothing herein shall be construed to entitle the Contractor to the exclusive use of any public street, alleyway, or parking area during the performance of work hereunder, and it shall so conduct its operations as not to interfere unnecessarily with the authorized work of utility companies or other agencies in such streets, alleyways, or parking areas. No street shall be closed to the public without first obtaining permission of the City and/or proper governmental authority. Where excavation is being performed in primary streets or highways, one lane in each direction shall be kept open to traffic at all times unless otherwise provided or shown and as approved by jurisdictional authorities. Toe boards shall be provided to retain excavated material if required by the City or the agency having jurisdiction over the street or highway. Fire hydrants on or adjacent to the Work shall be kept accessible to fire-fighting equipment at all times. Temporary provisions shall be made by the Contractor to assure the use of sidewalks and the proper functioning of all gutters, sewer inlets, and other drainage facilities.
- C. The Contractor shall take all necessary precautions for the protection of the work and the safety of the public. All barricades and obstructions shall be illuminated at night, and all lights shall be kept burning from sunset until sunrise. The Contractor shall station such guards or flaggers and shall conform to such special safety regulations relating to traffic control as may be required by the public authorities within their respective jurisdictions. All signs, signals, and barricades shall conform to the requirements of FDOT.

- D. The Contractor shall remove traffic control devices when no longer needed, repair all damage caused by installation of the devices, and shall remove post settings and backfill the resulting holes to match grade.
- E. Temporary Street Closure: If closure of any street is required during construction, a formal application for a street closure shall be made to the authority having jurisdiction at least 30 days prior to the required street closure in order to determine necessary sign and detour requirements. Detour signs shall be provided, installed prior to street closure, and removed after construction by the Contractor. MOT plans shall address all temporary street closures.
- F. Temporary Driveway Closure: The Contractor shall notify the City or occupant (if not owner-occupied) of closure of driveways to be closed more than one eight-hour work day, at least three (3) working days prior to the closure. The Contractor shall minimize the inconvenience and minimize the time period that the driveways will be closed. The Contractor shall fully explain to the owner/occupant how long the work will take and when closure is to start.
- G. Temporary Bridges: Whenever necessary, the Contractor shall provide suitable temporary bridges or steel plates over unfilled excavations, except in such cases as the Contractor shall secure the written consent of the individuals or authorities concerned to omit such temporary bridges or steel plates, which written consent shall be delivered to the Engineer prior to excavation. All such bridges or steel plates shall be maintained in service until access is provided across the backfilled excavation. Temporary bridges or steel plates for street and highway crossing shall conform to the requirements of the authority having jurisdiction in each case, and the Contractor shall adopt designs furnished by said authority for such bridges or steel plates, or shall submit designs to said authority for approval, as may be required. Steel plates must have approval prior to being placed over all open excavations. The Contractor assumes all risks for any shifting of the plates, if approved for use.

1.03 CONTRACTOR PARKING

- A. The Contractor shall obtain parking for all personnel vehicles as required.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01600
MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: Material and equipment incorporated into the Work:

1. Conform to applicable specifications and standards.
2. Comply with size, make, type and quality specified, or as specifically approved in writing by the Engineer.
3. Manufactured and fabricated products:
 - a. Design, fabricate and assemble in accord with the best engineering and shop practices.
 - b. Manufacture like parts of duplicate units to standard sizes and gauges to be interchangeable.
 - c. Two or more items of the same kind shall be identical, by the same manufacturer.
 - d. Products shall be suitable for service and conditions.
 - e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

B. Related Requirements Described Elsewhere:

1. Conditions of the Contract.
2. Summary of Work: Section 01010.
3. Special Project Procedures: Section 01100.
4. Shop Drawings: Section 01340.
5. Cleaning: Section 01710.

1.02 APPROVAL OF MATERIALS

- A. Only new materials and equipment shall be incorporated in the Work. All materials and equipment furnished by the Contractor shall be subject to the inspection and approval of the Engineer. No material shall be delivered to the Work without prior approval of the Engineer.

- B. Within thirty (30) days after the Effective Date of the Agreement, the Contractor shall submit to the Engineer, data relating to materials and equipment he proposes to furnish for the Work. Such data shall be in sufficient detail to enable the Engineer to identify the particular product to form an opinion as to conformity to the specifications. The storage and protection of the data shall comply with Paragraph 1.06 of this Section.
- C. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the Contractor. If the Engineer requires, either prior to beginning or during the progress of the Work, the Contractor shall submit samples of materials for such special tests as may be necessary to demonstrate that they conform to the specifications. Such samples shall be furnished, stored, packed and shipped as directed at the Contractor's expense. Except as otherwise noted, the Contractor will make arrangements for and pay for the tests.
- D. The Contractor shall submit data and samples sufficiently early to permit consideration and approval before materials are necessary for incorporation in the work. Any delay of approval resulting from the Contractor's failure to submit samples or data promptly shall not be used as a basis of claim against the Owner or the Engineer.
- E. In order to demonstrate the proficiency of workmen or to facilitate the choice among several textures, types, finishes and surfaces, the Contractor shall provide such samples of workmanship or finish as may be required.
- F. The materials and equipment used on the Work shall correspond to the approved samples or other data.

1.03 SUBSTITUTIONS AND PRODUCTS OPTIONS

- A. Only approved products listed in the Appendix, *List of Approved Products*, will be used on the project.

1.04 MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION

- A. When Contract Documents require the installation of Work to comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including five copies to the Engineer.
 - 1. Maintain one set of complete instructions at the job site during installation and until completion.
- B. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformance with specified requirements.
 - 1. Should job conditions or specified requirements conflict with manufacturer's instruction, consult with Engineer for further instructions.
 - 2. Do not proceed with Work without clear instructions.
- C. Perform Work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.05 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of products in accordance with construction schedules, coordinate to avoid conflict with work and conditions at the site.
 - 1. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
 - 2. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that products are properly protected and undamaged.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

1.06 STORAGE AND PROTECTION

- A. The Contractor shall furnish a covered, weather-protected storage structure providing a clean, dry, noncorrosive environment for all mechanical equipment, valves, architectural items, electrical and instrumentation equipment, and special equipment to be incorporated into this Project. Storage of equipment shall be in strict accordance with the "instructions for storage" of each equipment supplier and manufacturer including connection heaters, placing of storage lubricants in equipment, etc. Corroded, damaged or deteriorated equipment and parts shall be replaced before acceptance of the project. Equipment and materials not properly stored will not be included in a payment estimate.
- B. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible.
 - 1. Store products subject to damage by the elements in weather-tight enclosures.
 - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
 - 3. Store fabricated products above the ground, on blocking or skids, to prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings and provide adequate ventilation to avoid condensation.
 - 4. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.
- C. All materials and equipment to be incorporated in the work shall be handled and stored by the Contractor before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage of any kind whatsoever to the material or equipment.
- D. Cement, sand and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural and miscellaneous steel, and reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Precast concrete beams shall be handled and stored in a manner to prevent cracking. Brick, block and similar masonry products

shall be handled and stored in a manner to reduce breakage, chipping, cracking and spilling to a minimum.

- E. All materials which, in the opinion of the Engineer, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the work, and the Contractor shall receive no compensation for the damaged material or its removal.
- F. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage deterioration.
- G. Protection After Installation: Provide substantial coverings and necessary to protect installed products from damage from traffic and subsequent construction operations. Remove coverings when no longer needed.
- H. The Contractor shall be responsible for all material, equipment and supplies sold and delivered to the Owner under this Contract until final inspection of the work and acceptance thereof by the Owner. In the event any such material, equipment and supplies are lost, stolen, damaged or destroyed prior to final inspection and acceptance, the Contractor shall replace same without additional cost to the Owner.
- I. Should the Contractor fail to take proper action on storage and handling of equipment supplied under this Contract within seven days after written notice to do so has been given, the Owner retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from the Contractor's Contract. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering and any other costs associated with making the necessary corrections.

1.07 SPECIAL TOOLS

- A. Manufacturers of equipment and machinery shall furnish any special tools (including grease guns or other lubricating devices) required for normal adjustment, operations and maintenance, together with instructions for their use. The Contractor shall preserve and deliver to the Owner these tools and instruction in good order no later than upon completion of the Contract.

1.08 STORAGE AND HANDLING OF EQUIPMENT ON SITE

- A. Because of the long period allowed for construction, special attention shall be given to the storage and handling of equipment on site. As a minimum, the procedure outlined below shall be followed:
 - 1. Equipment shall not be shipped until approved by the Engineer. The intent of this requirement is to reduce on-site storage time prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from the Engineer. Equipment shipped to the site shall be stored in accordance with the specifications herein.
 - 2. All equipment having moving parts such as gears, electric motors, etc. and/or instruments shall be stored in a temperature and humidity controlled building approved by the Engineer, until such time as the equipment is to be installed.

3. All equipment shall be stored fully lubricated with oil, grease, etc. unless otherwise instructed by the manufacturer.
4. Manufacturer's storage instructions shall be carefully studied by the Contractor and reviewed with the Owner by him. These instructions shall be carefully followed and a written record of this kept by the Contractor.
5. Moving parts shall be rotated a minimum of once weekly to insure proper lubrication and to avoid metal-to-metal "welding". Upon installation of the equipment, the Contractor shall start the equipment, such that it does not deteriorate from lack of use.
6. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. Mechanical equipment to be used in the work, if stored for longer than ninety (90) days, shall have the bearings cleaned, flushed and lubricated prior to testing and startup, at no extra cost to the Owner.
7. Prior to acceptance of the equipment, the Contractor shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certification by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guarantee the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at the Contractor's expense.

1.09 WARRANTY

- A. For all major pieces of equipment, submit a warranty from the equipment manufacturer as specified herein. The manufacturer's warranty period shall be concurrent with the Contractor's for one (1) year after the time of completion and acceptance.

1.10 SPARE PARTS

- A. Spare parts for certain equipment provided under Divisions 15 have been specified in the pertinent sections of the Specifications. The Contractor shall collect and store all spare parts so required in an area to be designated by the Owner. In addition, the Contractor shall furnish to the Engineer an inventory listing all spare parts, the equipment they are associated with, the name and address of the supplier, and the delivered cost of each item. Copies of actual invoices for each item shall be furnished with the inventory to substantiate the delivered cost.

1.11 GREASE, OIL AND FUEL

- A. All grease, oil and fuel required for testing of equipment shall be furnished with the respective equipment. The Owner shall be furnished with a year's supply of required lubricants including grease and oil of the type recommended by the manufacturer with each item of equipment supplied.

- B. The Contractor shall be responsible for changing the oil in all drives and intermediate drives of each mechanical equipment after initial breaking of the equipment, which in no event shall be any longer than three weeks of operation.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01700

PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope of Work: Comply with requirements stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the Work.

1.02 SUBSTANTIAL COMPLETION

- A. The Work will not be substantially complete, and Contractor may not request substantial completion inspection unless the following submittals and work is completed:
1. All Operation and Maintenance manuals have been submitted.
 2. Project Record Documents, including the signed and sealed Project Record Survey, are complete and have been submitted and reviewed to the requirements of Section 01720. Additionally, the Project Record Documents must be approved by the Engineer and the City prior to deeming the project Substantially Complete.
 3. All areas to be used and occupied are safe, operable and complete.
 4. All painting, finishes, fencing, cleanup, final grading, grassing, planting, sidewalk construction, paving and restoration efforts shall have been completed and are ready for inspection.
 5. The water and sewer mains are installed and connected to the existing system.
 6. All the following related tests/inspections and Florida City of Environmental Protection permit clearances are complete and approved.
 - a. Water distribution system:
 - 1) backfill density tests
 - 2) hydrostatic pressure test
 - 3) bacteriological test
 - 4) "Clearance For Use" Letter by FDEP or the DOH
 - b. Sewage collection system:
 - 1) gravity main backfill density tests
 - 2) manhole backfill density test submittal

- 3) gravity main low-air pressure test
 - 4) gravity main lamp inspection
 - 5) manhole inspection
 - 6) "Clearance For Use" Letter by FDEP or the DOH
7. All deficiencies noted on inspection reports or nonconformances are corrected or the correction plan approved.
 8. Until the Certificate of Substantial Completion is fully executed, the project shall not be deemed substantially complete.
- B. When the conditions of paragraph 1.02 A. are met the Contractor shall submit to the Engineer:
1. A written notice that he considers the Work, or portion thereof, is substantially complete, and request an inspection.
 2. A punch list of items to be corrected. (Uncompleted work which is not related to the safe, effective, efficient use of the Project may be allowed on the punch list with the Engineer's approval.)
- C. Within a reasonable time after receipt of such notice, the Engineer will make an inspection to determine the status of completion.
- D. Should the Engineer determine that the Work is not substantially complete:
1. The Engineer will promptly notify the Contractor in writing, giving the reasons therefor.
 2. Contractor shall remedy the deficiencies in the Work and send another written notice of substantial completion to the Engineer.
 3. The Engineer will within reasonable time, reinspect the Work. The Contractor will be liable for all reinspection fees.
- E. When the Engineer finds that the Work is substantially complete, he will:
1. Schedule a walk-through of the project to include the Owner. Engineer shall determine the completeness of the punch list and readiness of the project for occupancy by the Owner.
 2. Prepare and deliver to Owner a tentative Certificate of Substantial Completion with the tentative punch list of items to be completed or corrected before final inspection.

3. After consideration of any objections made by the Owner as provided in Conditions of the Contract, and when the Engineer considers the Work substantially complete, he will execute and deliver to the Owner and the Contractor a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected. Any incomplete work allowed on a punch list must be reinspected upon completion and any deficiencies found will be added to the punch list.

1.03 PROJECT CLOSEOUT

- A. As construction of the project enters the final stages of completion, the Contractor shall, in accordance with the requirements set forth in the Contract Documents, attend to or have already completed the following items:
 1. Placed water or sewer lines into service once FDEP or DOH clearances have been obtained.
 2. Correcting or replacing defective work, including completion of items previously overlooked or work which remains incomplete, all as evidenced by the City's "Punch" lists.
 3. Make final submittals.
 4. Attend to any other items listed herein or brought to the Contractor's attention by the City.

1.04 CLOSEOUT TIMETABLE

- A. The Contractor shall establish dates for equipment testing, acceptance periods, and on-site instructional periods (as required under the Contract). Such dates shall be established not less than one week prior to beginning any of the foregoing items, to allow the City, the Engineer, and their authorized representatives sufficient time to schedule attendance at such activities.

1.05 FINAL SUBMITTALS

- A. Before the acceptance of the project major milestones for substantial completion, the Contractor shall submit to the Engineer (or to the City if indicated) certain records, certifications, etc., as listed in paragraph 1.02 A and as specified elsewhere in the Contract Documents. Missing, incomplete or unacceptable items, as determined by the Engineer or the City, shall indicate non-compliance with substantial completion major milestone dates. A partial list of such items appears below, but it shall be the Contractor's responsibility to submit any other items which are required in the Contract Documents:
 1. Written Test results of project components.
 2. Performance affidavits for equipment and materials.

3. Operation and Maintenance Manuals for equipment.
4. Record Drawings: Refer to Section 01720, Project Record Documents and Survey.
5. Written guarantees, where required.
6. Certificates of inspection and acceptance by local governing agencies having jurisdiction.
7. Releases from all parties who are entitled to claims against the subject project, property, or improvement pursuant to the provisions of law.

1.06 PUNCH LISTS

- A. Final cleaning and repairing shall be scheduled upon completion of the project.
- B. The Engineer will make his final inspection whenever the Contractor has notified the Engineer that the work is ready for the inspection. Any work not found acceptable and requiring cleaning, repair and/or replacement will be noted on the "Punch" list. Work that has been inspected and accepted by the Engineer shall be maintained by the Contractor, until final acceptance of the entire project.
- C. Whenever the Contractor has completed the items on the punch list, he shall again notify the Engineer that it is ready for final inspection. This procedure will continue until the entire project is accepted by the Engineer. The "Final Payment" will not be processed until the entire project has been accepted by the Engineer and all of the requirements in paragraph 1.05 "Final Submittals" of this Section have been satisfied.

1.07 MAINTENANCE AND GUARANTEE

- A. The Contractor shall comply with all maintenance and guarantee requirements of the Contract Documents.
- B. Replacement of earth fill or backfill, where it has settled below the required finish grade elevations, shall be considered as a part of such required repair work, and any repair or resurfacing constructed by the Contractor which becomes necessary by reason of such settlement shall likewise be considered as a part of such required repair work unless the Contractor shall have obtained a statement in writing from the affected private City or public agency releasing the City from further responsibility in connection with such repair or resurfacing. All repair work will be at the Contractor's cost.

- C. The Contractor shall make all repairs and replacements promptly upon receipt of written order from the City. If the Contractor fails to make such repairs or replacements promptly, the City reserves the right to do the Work and the Contractor and his surety shall be liable to the City for the cost thereof.

1.08 TOUCH-UP AND REPAIR

- A. The Contractor shall touch-up and repair damage to all field painted and factory finished equipment. Touch-up of equipment panels, etc., shall match as nearly as possible the original finish. If in the opinion of the Engineer the touch-up work is not satisfactory, the Contractor shall repaint the item. Contractor shall also furnish additional paint as defined in the contract documents.

1.09 FINAL CLEANUP

- A. The Contractor shall promptly remove from the vicinity of the completed Work, all rubbish, unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. Final acceptance of the Work by the City will be withheld until the Contractor has satisfactorily complied with the foregoing requirements for final cleanup of the project site.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01710

CLEANING

PART 1 - GENERAL

1.01 SCOPE OF WORK

This Section specifies the maintenance of the work site in a clean, orderly, hazard-free condition.

1.02 QUALITY ASSURANCE:

- A. Conduct cleaning and disposal operations in accordance with local ordinances and anti-pollutions laws. Rubbish, volatile wastes, and other construction wastes shall be neither burned nor buried on the work site, and shall not be disposed of into storm drains, sanitary drains, streams or other waterways.
- B. Final cleaning shall be accomplished either by workmen experiences in cleaning operations or by professional cleaners.

PART 2 – PRODUCTS

2.01 ON-SITE WASTE CONTAINERS:

Provide on-site waste containers for collection of waste materials, debris and rubbish. Storage requirements for environmentally hazardous materials are to be followed by the Contractor at all times.

2.02 CLEANING MATERIALS:

Cleaning materials shall be as recommended by the manufacturer of the surface to be cleaned.

PART 3 – EXECUTION

3.01 SAFETY REQUIREMENTS:

- A. Maintain work site in accordance with local ordinances and anti-pollution laws applicable to work site cleanliness, and in a neat, orderly and hazard-free condition until final acceptance of the work. Catwalks, accessible underground structures, work site sidewalks and walkways adjacent to the work site shall be kept free from hazards caused by construction activities.

- B. Store volatile wastes including rags in covered metal containers, and remove from work site daily. Prevent accumulations of wastes which create hazardous conditions.
- D. Artificially ventilate spaces which are not naturally ventilated when volatile and noxious substances are being used in those spaces.

3.02 INTERIM CLEANING:

- A. Perform cleaning every workday for duration of the Work. Structures, grounds, and areas of the work site and public and private properties shall be maintained free from accumulations of waste materials and rubbish caused by construction operations on the work site. Place waste materials and rubbish in on-site containers.
- B. Remove or secure loose material on open decks and on other exposed surfaces at end of each day's work or more often to maintain work site in hazard-free condition. Prevent dislodgement of materials due to wind and other forces.
- C. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- D. Empty on-site waste containers whenever necessary so that trash overflow does not occur. Legally dispose of contents at either public or private dumping areas.
- E. Control the handling of materials, debris and rubbish; do not drop or throw from heights.
- F. Immediately remove spillage of on-site fuels, oil or construction-related material from hauling routes.
- G. Perform cleaning operations so dust and other contaminants resulting from cleaning processes will not fall on wet, newly painted surfaces.

3.03 FINAL CLEANING:

- A. In preparation for final acceptance or occupancy, conduct final inspection of exposed interior and exterior surfaces, and of concealed spaces.
- B. Remove grease, dust, dirt, rust stain on concrete floors, labels, fingerprints and other foreign materials from exposed interior and exterior finished surfaces. Flush down all parking level areas and stairs leaving such surfaces clean of all sand, laitances, etc.
- C. Maintain cleaning operations until project has been finally accepted.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1- GENERAL

1.01 DESCRIPTION

- A. Scope of Work: The Contractor is responsible for maintaining one record copy of:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modification of the Contract.
 - 5. Engineer's written orders or instructions.
 - 6. Approved Shop Drawings, Product Data and Samples.
 - 7. Field Test records.
 - 8. Construction photographs.
 - 9. As-built dimensions and elevations as recorded by the Contractor's Florida Registered Land Surveyor.
- B. The records listed above are to be made available for the City's review at all times for all projects.

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Maintain documents in a clean dry, legible condition and in good order. Do not use record documents for construction purposes.

1.03 RECORDS

- A. During the life of the Contract the Contractor shall retain the services of a Florida Registered Land Surveyor who shall maintain records of the installation, including all deviations from Plans and Specifications.

- B. Measure and Record all information for all projects concurrently with construction progress.
- C. Submit redlines, partially completed as-built plan sheets and fully complete as-built Plan sheets, all as required by and satisfactory to, the City on a monthly basis or such lesser interval as directed by the City.
- D. Label each document "PROJECT RECORD" in neat large printed letters.
 - 1. Do not conceal any work until as-built information is recorded by the Contractor's surveyor and, if so required, by the City surveyor.
 - 2. All locations for future connections or tie-ins shall be left unburied and uncovered until the Contractor's Florida Registered Land Surveyor measures and records the as-built information.
 - 3. Restrained pipe, end line valves, thrust blocks shall be left uncovered for the last complete length. In line valves and tees shall be left exposed for one length on both sides plus the face end. Measure and record the elevation, horizontal and vertical alignment, and inclination for these items.
 - 4. For all projects, the Contractor's Florida Registered Land Surveyor (FRLS) shall maintain exact and extensive records of any deviations from the Plans or Specifications. These records shall be satisfactory to the Engineer, who's decision shall be final, and sufficient to allow the production of accurate as-built Plans which correctly and completely portray the work as constructed.
 - 5. For all projects, the Contractor's Florida Registered Land Surveyor shall record data as follows during the entirety of construction.
 - a. For facility (eg a water or sewage plant, pumping station, or similar site if so designated by City) projects, record as-built dimensions and elevations every twenty-five feet or portion thereof along the pipeline and at every abrupt change in direction of the new line.
 - b. For pipeline projects, constructed in the public right-of-way dimensions and elevations every one hundred feet or portion thereof along the pipeline and at every horizontal and vertical change in direction.
 - c. Identify separations with all horizontal and vertical distances identified between existing utilities and the crossing location of the new utility such that FDEP/DOH requirements are documented as having been met by the Contractor. In all cases record locations and elevations for each valve, fitting, service line, fire hydrant,

water sampling point, utility poles adjacent to the proposed line, overhead wires crossing the ditch line (approximate height above grade) and other appurtenances along the pipeline.

- d. The identity, dimensions, location and elevation of any existing utility crossing the proposed line and so immediately adjacent to the new line as to be exposed by the excavation shall also be recorded. Locate, excavate expose and record the same data for any utility shown in the plans whose proximity to the proposed pipeline could affect the certification requirements of the new installation. Note that in instances of a very wide ditch due to ground conditions the recording of data for adjacent, paralleling, utilities shall only be required for lines which come within three feet of the outside of the pipe being installed unless otherwise ordered by the City who's decision shall be final.
- e. Without exception, for all thrust blocks, the top elevation, outer dimensions, thickness of the block, length and location of any sheet piling, if used, shall be recorded by the Contractor's FRLS.
- f. Specific locations and elevation of equipment, the buildings and miscellaneous items installed inside them shall be recorded as applicable and as required by the City.
- g. Without exception, where the substitution of another piece of equipment for that shown on the Plans has been allowed, the footprint, clearance and elevation dimensions shall be recorded by the Contractor's FRLS and these changes shall be accurately and thoroughly portrayed on the as-built plans.
- h. The Contractor's Licensed Surveyor shall prepare from the field data, as-built record drawings showing correctly, completely and accurately the installation, embracing all changes and deviations made during construction, including all construction variances, to reflect the work as it was constructed.
- i. Record Drawings shall be prepared as specified hereinafter.
- j. If the City or Engineer determines that the Drawings are not acceptable, they will be returned to the Contractor with a cover letter noting the deficiencies and/or reasons for the disapproval. Contractor shall have ten calendar days to correct all exceptions taken by the City and resubmit as-built record drawings to the City for final acceptance.

1.04 DRAWINGS

- A. During the life of the Contract, maintain records of all deviations from the Plans and Specifications and prepare therefrom As-Built Record Drawings showing correctly and accurately all changes and deviations made during construction to reflect the work as it was actually constructed. It is the responsibility of the Contractor to check the As-Built Record Drawings for errors and omissions prior

to submittal to the City and certify in writing that the As-Built Record Drawings are correct and accurate, including the actual location of all piping.

B. Legibly Mark to Record Actual Construction: All data as previously specified for all installations by the Contractor's FRLS. For on-site structures and facilities work the Contractor's Florida Registered Land Surveyor shall record:

1. Depths of various elements of foundation in relation to finish first floor and datum plane.
2. All exposed and underground piping and ductwork with elevations and dimensions and locations of valves, pull boxes, etc. Changes in location. Horizontal and vertical locations of underground utilities and appurtenances, measured from permanent reference points, plant survey grids, property lines and similar.
3. Field changes in dimensions, locations and details.
4. Changes made by Engineer's written instructions or by Change Order.
5. Details not on original Plans.
6. Equipment and piping relocations.
7. Major architectural and structural changes in structures, including tanks.
8. Record drawings shall be prepared as specified hereinafter.

C. Specifications and Addenda: Legibly mark each section to record the following:

1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
2. Changes made by Engineer's written instructions or by Change Order.

D. Approved Shop Drawings: Provide record copies for system diagrams and drawings together with each element of process equipment, piping, electrical system and instrumentation system.

1.05 SUBMITTALS

A. Accompany submittal with transmittal letter in duplicate, containing:

1. Date.
2. Project title and number.

3. Contractor's name and address and phone number.
 4. Title and number of each Record Document.
 5. Signature of Contractor or his authorized representative.
- B. Record Drawings with five hard copies which have been signed and sealed by the surveyor shall be submitted to the City for the Engineer's review. Drawings shall conform to recognized standards of drafting and the minimum technical standards as set forth by the Board of Professional Surveyors and Mappers, shall be neat, legible and on 24-inch by 36-inch plans. These materials shall be submitted to the City for the Engineer's review as a prerequisite for payment during the course of construction as previously specified and final, complete sets of documents within ten calendar days following the completion date of successful testing of all mains, equipment and appurtenances under this Contract. Final acceptance will not be made until the set of as-built record drawings and five sets of signed and sealed prints and CAD files have been approved and accepted by the City and the Engineer.
1. In cases where a portion of a pipeline system or parts of a process system are put into service, the above conditions shall apply for the in-service portion and acceptance of work constructed shall be withheld until the as-built drawings are accepted by the City.
 2. As-Built Record Drawings, as prepared by the Contractor's Florida Registered Land Surveyor and submitted by the Contractor, shall comply with following criteria and standards:
 - a. Title block must show the Contract or Project Title (as applicable); Contract number; Contractor's name; Engineer of Record's name; Surveyor's name and address; date; location; and where appropriate to the work, size and type (ie water main, sanitary gravity main, sanitary force main) of main.
 - b. Baselines or centerlines must be tied to section corners, monument line and right-of-way lines.
 - c. Pipeline must be tied to baseline or centerline with stations and offsets.
 - d. Baselines or centerlines must show bearings or deflection angles, or delta, radius, chord and arc length for curves.
 - e. Show all horizontal curve data, including point of curvature (PC) and point of tangency (PT) stations or radial bearing.
 - f. Stationing must be the same as shown on construction drawings and must be tied to Section corners, centerline intersections and all other pertinent control points within the Project. All such pertinent

- points shall have their stationing shown and where there is dual stationing for a point, both stations shall be called out.
- g. Identify all streets by name or number and show stationing at all intersecting streets.
 - h. Refer to vertical datum plane and and identify the location, elevation and source supplying the bench mark used.
 - i. Tie easement lines to survey baseline or platted centerline and right-of-ways.
 - j. Show horizontal and vertical locations of all fittings, deflections, or at any significant change of direction, and at a maximum of 100-foot intervals along the pipeline for off-site (eg in the public right-of-way) and at maximum 25-foot intervals for on-site (eg on a facility such as a pump station or plant) work.
 - k. On all pipe fittings of 36-inch diameter or over, (ie tees, bends, crosses, wyes, increasers/decreasers, bevels) elevations must be taken at the end and center points to reflect the true elevation and attitude of the fitting.
 - l. Elevations of natural ground or pavement over the pipeline must be shown at each position where the pipe elevation is shown and at intervening high and low points.
 - m. Manhole rim and valve box rim elevations must be shown.
 - n. Show all invert and bottom elevations in manholes and valve vaults or boxes. Show all invert and bottom elevations together With pipe size, and where it can be determined, pipe material, for existing structures having pipes which cross the pipeline being constructed.
 - o. Locations and elevations together with diameter, thickness and material of all casings.
 - p. Location, top and bottom elevations of all sheeting left in place.
 - q. Coordinate values used inside plants shall be the local City established coordinate systems referenced to the property boundary.
 - r. State plane coordinate values for all new valves and manholes; on existing valves and manholes at points of connection or closest to the point of connection and the point of connection itself.
 - s. All FDEP/DOH separation requirements are to be provided on the as-built plans and to meet FDEP/DOH standards.
3. Certification: The Contractor shall certify on as-built record drawings all other actual constructed details and information as may be required by the City including but not limited to:
 - a. Valves must be identified by size, type, end condition; and on valves 16-inch or larger, the manufacturer's name and number of turns required to open or close the valve.
 - b. Show calculated pipeline percent of grade between manholes of gravity systems.

- c. Types and sizes of sheeting and piling together with measured and complete; location, dimensional and elevation data on any pile caps, tie backs, anchors, walers or other appurtenant structures left in place.
- C. Drawings on Magnetic Media: The City and Engineer reserves the right to require submittal of signed and sealed as-built drawings in AutoCAD for Windows Release 14 format or later. Graphical information contained on magnetic media shall be the same as provided on plan sheets.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION